

# Chemical Week

January 9, 1954

Price 35 cents



Reshaped pharmaceutical industry pauses, shifts gears for slower, steadier climb. . . . p. 24

► **Acrylic-based paints get set to battle "old timers" for spring-time sales spurt . . . . . p. 42**

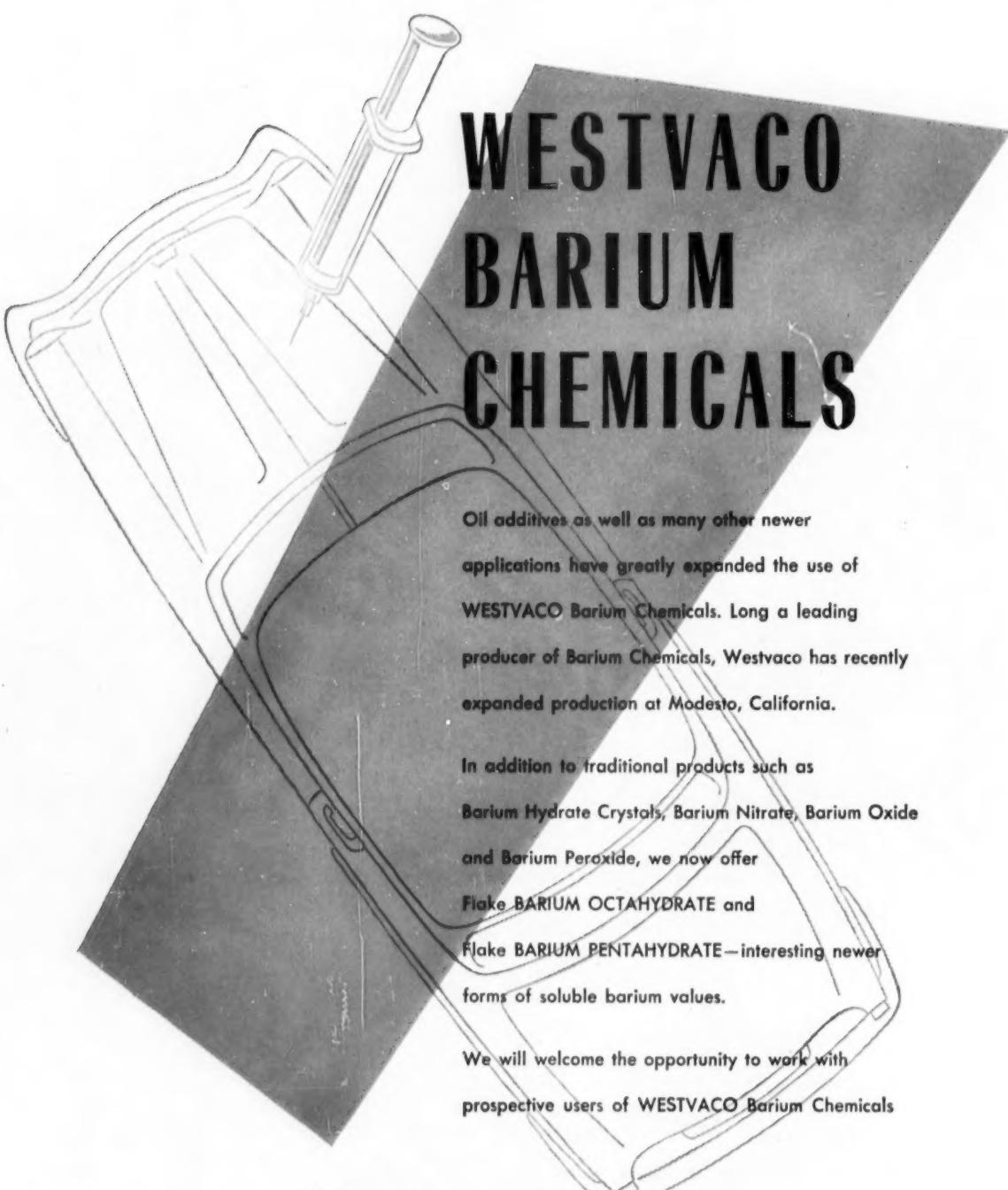
**Eye on tomorrow:** here's how chemical companies are beefing up marketing tactics . . . . p. 55

► **Compounder Veith:** elbow room, speedy handling pare his costs, hike his profits . . . . . p. 58

**Dical capacity mounts;** producers fret: Will feed formulators boost their take? . . . . . p. 65



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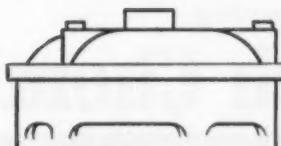
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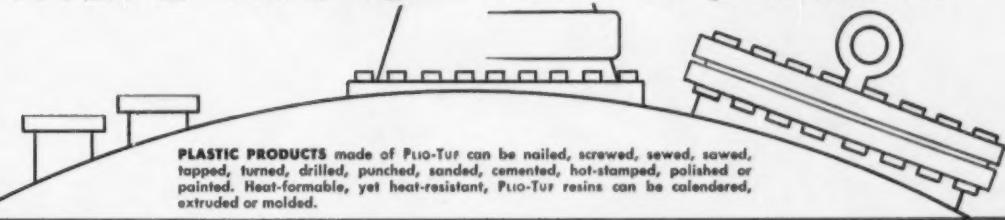
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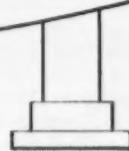
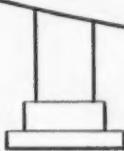


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# Chemical Week

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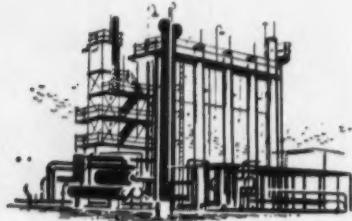
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## OPINION

### Brain-Washing Technique

To THE EDITOR: . . . I have often admired your magazine because you have had the "guts" to tackle some very controversial issues . . . but you have disappointed me by not taking a stand on fluoridation of drinking water . . .

It seems to me that some very vicious and ridiculous attacks are being made . . . on the chemical industry

I am enclosing one clipping from a local paper . . . The least you can do, in my opinion, it to report on it . . . and, as I said, I also think you should take a stand on the whole issue . . .

MAURICE S. SANKEY  
San Francisco, Calif.

*Right. The least—and the most—we'll do is to report the charges made against fluoridation—ridiculous as many are. The San Francisco newspaper story: a Mrs. Hugo Franzen, executive secretary of the Citizen's Committee Against Fluoridation, charged, in her appearance before a state assembly subcommittee, that fluoridation was a devious Communist plot to brain-wash the American public . . . that it was the method by which the Nazis conquered Poland in 1939.*

*On the basic question, whether or not water should be fluoridated, CW chooses to take no stand. The reason: we regard it as, in the main, a medical question, and CW's editors are chemists and chemical engineers—not medical men.—Ed.*

### Protect Our Research

To THE EDITOR: I read with interest the letter (Dec. 19) by Mr. Harold L. Elworthy. I was rather surprised at the implication to the chemical industry in his statement that "industries . . . fight back angrily . . . and . . . overstate one's case." I have yet to see the chemical industry's case overstated. Rather, it is understated.

The general point of his letter is that the confidence of the public in investing money in chemical issues in the stock market would decline if the tariff were lowered. This would indeed be true. It is a fact that the chemical industry as a whole, and the Synthetic Organic Chemical segment of it particularly, has one of the largest rates of growth of any major industry in this country. Chiefly responsible for the growth of the

chemical industry is the large percentage of gross sales put back into research, approximately 5%. This is greater than the figures reported for any other industry.

It is obvious that if tariffs are reduced and our industry is forced to compete with foreign producers paying their labor from one-quarter to one-tenth of what we pay ours, certain things will have to be cut out. It is undoubtedly true that one of the first expenses to be reduced will be research. The rate of growth of the industry will decline and the stock market prices will naturally go down.

I feel that it is very important to inform the public of this situation . . .

The research aspect of our industry is tied up very closely with national defense, since during times of stress chemists and engineers are called upon to develop entirely new plants and products. This was particularly true during the last war when synthetic rubber and atomic energy required the services of many, many chemists and engineers. Only with a healthy research establishment can we have the reserve scientific corps necessary for such efforts.

The aforementioned and many other facts are included in the current statements of the Manufacturing Chemists' Assn. and the Synthetic Organic Chemical Manufacturers Assn. to the Randall commission. Both associations took a long sober look at the tariff situation and stated the case as objectively and fairly as they could. The mood of both statements was neither exaggerated nor angry.

OTTO B. MAY  
President  
Otto B. May, Inc.  
Newark, N. J.

### DATES AHEAD

Commercial Chemical Development Assn., winter meeting, Statler hotel, St. Louis, Mo., Jan. 19.

Assn. of American Soap and Glycerine Producers, annual meeting, Waldorf-Astoria hotel, New York, N.Y., Jan. 26-28.

Chlorine Institute, Inc., annual meeting, Biltmore hotel, New York, N.Y., Jan. 27.

CW welcomes expressions of opinion from readers. The only requirements: that they be pertinent, as brief as possible.

Address all correspondence to: W. A. Jordan, Chemical Week, 330 W. 42nd St., New York 36, N.Y.

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## NEWSLETTER

Year end, year beginning. That always focuses attention—and thinking—on the "what's ahead" question. And this week shapes up as open season for prognostications: chemical executives, industry leaders, economists and government officials have all been busy expounding their views.

This juts out, and in contrast with the tone of a few months ago: a calm acceptance of the prospect of somewhat slower business, an underlying feeling of confidence ("we can cope with our problems"), a virtual absence of dismal defeatism or panic.

That's a reversal of the mumblings early last fall. And there are several reasons: excess profits tax will be off, a good many companies have tightened their organizational setups, put themselves in a better competitive position for the upcoming tussle for sales.

But some are still fretting—and some still whistling in the dark. A big worry: break-even points have climbed and climbed. Many a concern hasn't, as yet, completed break-even analyses. This they know, however: they're high and many border on the irreducible. Labor costs, as one example, are going to be tough to whittle.

But, take business indexes or leave them, you can expect to hear a good deal about business from Washington. It's simple politics:

The Democrats will strive to make voter-capital of "recession"; the Republicans will stress "rolling readjustment."

That's just a matter of semantics, but Washington is firming up some antirecession plans. There's a lot of behind-the-scenes urging by the President's economic advisers for more liberal tax allowances for corporations, broader depreciation terms. The latter is, of course, of top concern to chemical makers.

Like it or not Washington doings will be of top business consequence this year: tariff changes (if there are any) can topple chemical plans; farm parity policies will impinge upon agricultural chemicals; housing activities will batter or buttress paint—and pigment, resin, solvent—sales.

Meanwhile, a few certificates of necessity continue to trickle out of Washington—but not many.

This week's top two:

Railroad chemical freight cars, SHPX Third Corp. (N. Y.), \$1 million at 70%.

Petroleum refining, Shell Oil (Puget Sound), \$21,870,000 (65%), \$31,430,000 (45%), \$2,560,000 (15%).

New products, new manufacturing arrangements are on the move too:

- Within the next two months, Sherwin-Williams will launch a brand-new paint. It will be called Applique, is the result of a three-year hush-hush research project. (Known within the company as "Operation Y".) It's for interior use, will be roller-applied. (A new roller has been designed specifically for use with the new product.)

- Colton Chemical Co. also of Cleveland, will become Standard of Ohio's second licensee to make and sell microballoons—the plastic balls

used to pare evaporation losses in oil storage. Hitherto, Bakelite has been the sole producer. Estimated Colton output: 600,000 to 800,000 lbs. in 1954.

• Hercules, whose phenol-acetone project signaled the launching of a hefty product diversification program, is now taking step two: it will put up a \$4-million dimethyl terephthalate plant at Burlington, N. J. Capacity: 12,000,000 lbs./year; scheduled date of completion: May, 1955; main customer: Imperial Chemical Industries of Canada's now-building Terylene (Dacron) project at Millhaven, Ont.

The Burlington plant will be the first FMT unit to exploit an air oxidation process, stemming from Imhausen Werke patents, and reared from laboratory to commercial scale by Hercules' development group.

• Eli Lilly (Indianapolis) is also taking a hard look at new sales opportunities. It will soon start to push agricultural antibiotics—to be sold in bulk to feed manufacturers as growth stimulants for fowl. Manufacturing site: Greenfield, Ind.

There's a lot of forehead-wrinkling in the soil conditioner business, and it looks as if there'll be a good deal more.

Last year—the first full year for soil conditioner selling—didn't live up to most expectations. A number of producers didn't even manage to equal '52's sales.

Most of the fly-by-nights are, fortunately, out of the business now. Currently, basic sellers are charting their springtime strategy. Goal: to resell a product that was battered and beleaguered by a handful of bucket-shop operators. Long-term target: the farm market. Problem: price.

This you can expect to hear more about, too. With excess profits taxes off, there'll be a lot of new chemical companies formed—to gain favorable tax positions.

And accountants are going to have their problems. A lot of smaller, fast-growing companies will reap the major immediate benefits. Many of the larger companies will not be quite as happy or as fortunate. This will pose problems—explaining to stockholders why they shouldn't partake of lush dividends right away.

Offshoot: far more than usual attention is now being paid to upcoming annual reports.

There's more ado about battery additives brewing. Following the trail blazed by AD-X2, a Kansas City concern, marketing a material called Sav-a-Battery, asked that its compound be tested by the National Academy of Sciences. Its plaint: that the Bureau of Standards tests were incomplete and inadequate. The FTC answer: no.

The Federal Trade Commission also dismissed charges this week against the big three soapmakers (Lever, Colgate, Procter & Gamble). The decision: that payments by the companies to customers to promote their products is not in violation of the Clayton Act. However, the year-old case against the same companies—charging restraint of trade and monopoly—is still pending.

... The Editors



◀ Hercules® explosives are used by geophysical crews to locate potential oil deposits. Hercules also makes cellulose and rosin derivatives that serve the petroleum industry in several ways—as in oil well drilling muds, corrosion inhibitors, and as additives in secondary recovery operations.



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## BUSINESS &amp; INDUSTRY . . .



UNION LEADERS REUTHER, MEANY, LEWIS: Will their 1953 smiles fade if "leveling-off" period continues through 1954?

## Strife for Security

Industrial relations directors will have full opportunity to display their pacifying talents in '54, it appears this week from a CW checkup on labor union plans for the year.

Spokesmen for the three big unions in the chemical and allied industries make it clear that their locals will be asking, working and fighting for a continuation this year of the increasing flow of all kinds of benefits to employees.

But while the increases in wages and fringe benefits came along rather readily during the past three years of industrial and defense build-up, unions' demands this year will come in a different economic setting; consequently, unionists themselves are predicting stronger resistance by employers.

**Push for Pensions:** Like AFL Pres. George Meany, who fears "a rising tide of unemployment" in '54, labor men are apprehensive, are striving for greater employee security. They'd like to have the "guaranteed annual wage," but won't be ready to bargain for it in the chemical industry before next year. Meanwhile, they'll step up efforts to win more generous pension plans, and — when they think they may win — they'll strike or threaten to strike to block layoffs.

With top union leadership now stabilized in AFL's Meany, CIO's Walter Reuther and UMW's John L. Lewis, these organizations feel husky

enough to continue their aggressive drive for economic gains even through a period of "readjustment." Accordingly, the AFL Chemical Workers will be out for "all we can get," hoping to equal the 8.2¢ average wage

increase it claims on its 1953 contract renewals and UMW District 50 will "base wage demands on what each company can stand." CIO's Gas, Coke & Chemical Workers, reporting that members' wages rose by more than 6¢/hour last year, will convene its executive board late this month to set up 1954 goals.

## Front Rank Exposure

Like G.I.'s "up front," chemical companies in the U.S. face a higher-than-average risk of being injured by any future increases in imports. This conclusion is drawn from an impartial study of the world trade situation,

"Aid, Trade and the Tariff," written by Library of Congress staffer Howard S. Piquet.

Piquet's book is sure to be referred to in tariff deliberations of the 83rd Congress, convening this

## Potential Perk-ups

(As estimated by Library of Congress researcher Piquet)

Product	1951 Imports under present tariff		Probable effect on imports if duty were suspended	Predicted Imports under "free trade"	
	Value per year	Percentage of U.S. market		Value per year	Percentage of U.S. market
Sodium nitrite	\$202,740	20	"Very sub- stantial"	\$405,000 or more	40 or more
Fluorspar	4,110,081	28	"Substantial"	7,000,000 (approx.)	49 (approx.)
Naphthenic acids	553,184	14	"Substantial"	1,050,000 (approx.)	24 (approx.)
Calcium carbide	1,965,275	2	"Moderate"	2,500,000 (approx.)	3 (approx.)
Glycerine	6,857,872	6	"Negligible"	7,000,000 (approx.)	6 (approx.)

week for its second session. Already the tome has been analyzed by the Synthetic Organic Chemical Manufacturers Assn., which feels that Piquet has overestimated the extent to which allied nations would be benefited by cutting U.S. tariff rates.

**Few But Painful:** That chemical companies have somewhat more than usual vulnerability to foreign competition is seen in Piquet's item-by-item commodity survey. While the chemical and allied industries accounted for just 8.1% of the country's total "value added by manufacture" in 1951, more than 16.6% of 1951's principal import commodities were products of chemical processing.

And even though only 12\* of those 37 categories of chemical products would be expected to enter the U.S. in "substantially" greater volume if customs duties were suspended, Piquet is quick to acknowledge that a small number of domestic company casualties might not be any index to the painfulness of the injuries.

"Injury is an individual matter and it can sometimes occur even when imports of a certain product are small in comparison with total domestic production."

**Political Implications:** Purpose of Piquet's study is to compare the probable economic effects of following each of the three foreign policy paths now open to the U.S.:

- Continue to grant foreign aid in large sums while continuing to restrict imports.
- Curtail foreign aid and allow exports to decline (due to anticipated widening of "the dollar gap").
- While curtailing aid, lower (U.S.) trade barriers and let imports rise.

Piquet leans toward the third alternative, argues that across-the-board temporary suspension of trade barriers might go far to close the dollar gap and "it would have an exhilarating psychological effect upon the other countries of the free world." He suggests that the federal government could succor import-injured industries through engineering, market assistance.

But to most U.S. chemical companies, preferring to keep on with their regular manufacturing operations rather than be weaned into new lines, Piquet's own figures (see table, p. 11)—are another warning that any steps in the direction of free trade are likely to cause harsh dislocations for many domestic producers.

\* Sodium nitrite, acetaldehyde, naphthenic acids, certain amines, certain ethylene compounds, alcohol, paints and enamels, varnishes, fluor spar, rayon and acetate broad-woven fabrics, glacial acetic acid, chlorine.

## Less to Go Around

There'll be a diminishing supply of graduating chemists and chemical engineers to spread around throughout the industry at February commencements this year. Going salaries at all levels are higher; petrochemical and basic chemical producers still take top preference honors in all sections of the country. Basic factor in job selection today: security, both for the immediate future and for the years to come.

In a nationwide survey concluded last week CW pollsters found a striking similarity in response from campuses from one end of the United States to the other. Almost everyone concedes that the trickle of graduates this February will far from satisfy the companies intent on filling technical manpower requirements. Requests for interview dates have in most cases far exceeded the institutions' ability to cope with them; many colleges have now reached the point at which they quite frankly admit to turning away all interview requests "for any time in 1954." Only in the Midwest has the demand been "only slightly above last year."

Salaries—at all academic levels—are still on the spiral upward. According to an average of engineering placement bureaus in 40 universities throughout the nation, the present starting salary offer for B.S. degree holders is \$380—compared with an average \$365 last June. A doctorate in chemistry brings \$565 against \$535 last June.

Certain companies, however, seem inevitably to set the pace salarywise. There's coming to be less and less divergence or spread in salaries offered regionally; in California, as in New York, particular companies are mentioned as "setting the salary line and the rest fall in."

**"Wages in the South vary more with the company than with the type of business they do. One basic chemical company here is offering from \$400-435; another, making the same product... will go only to \$370."**

But wage isn't always the deciding factor that causes one company "to get all the men it wants here." Rather, points out one Southern university, chemical graduates, 1954-vintage, are turning more and more to consider the security angle. They've lived through (most of them as children) one major depression followed by a world upheaval that isn't yet over. "Gradu-

ates a few years ago were looking for glamor . . . something new and different. Today, almost to the man they want a job with a future."

It puts the small, relatively unknown company at a decided disadvantage in hiring neophyte chemists, placement directors agree. Company personality, as evaluated from plant visits and as depicted by personnel recruiters can partially compensate for it, "but they're never in as good a spot as the old well-established company looking for men."

**"Initial salary isn't a primary selection factor unless a man is trying to decide between two companies of equal reputation, equal opportunity."**

Many extra stunts are being tried by companies in all sectors "to attract the young men's attention," universities report. Night graduate courses (at the company's expense) are often used as lures; movies of "last year's crop" are shown to drive home "that extra something."

Regional appeal still sways many graduates this year. Texans "would work in Texas at any cost;" Californians tend to hold to Western climes.

Major exception to the rule: "This year, as in the past, we've had a handful of small companies, looking for just one particular man. Their price is high—much higher than the norm—and it makes it worthwhile for someone to buck his natural preferences away."

**Still a Sleeper:** One major factor in job preference was noted time and time again in CW's survey. According to college placement officials, potential graduates are coming to take greater credence in what their predecessors say about a particular company than they do in all the carefully planned pep talks companies use as promotional ventures.

**"Probably the most important factor in job selection (and the chemical companies apparently don't realize it) is the influence of recent graduates returning to campus."**

In terms of job-popularity, petrochemicals, basic chemicals still lead throughout the nation's colleges; pharmaceutical companies bring up a slow third.

**Confidence Increasing:** One growing trend among today's graduates, colleges maintain, is that "the youngsters are sure they know what they

want in the way of a job." Nobody's quite sure where the knowledge is gained; "probably all the increased public relations chemical companies have been emphasizing over the past several years is finally beginning to pay off." Some colleges note that B.S. graduates today "see quite a few recruiters, but they know all along where they'd like to work." Doctorate candidates are even more decided; "we've only had a few in chemistry over the past three years who weren't all tied up long before graduation."

Many university representatives are openly concerned over the growing sense of self-confidence. "We're seeing too much today of this business of fitting a square peg in a round hole because of inadequate help in job selection," complains one Northeastern director. "The very profusion of job openings is largely to blame," states another. "Chemical companies should be invited to speak at colleges throughout a man's four-year training," suggests a third. "but for their own good as well as ours they should realize the importance of restrained self-salesmanship."

**"The greatest change in attitude in our chemists, chemical engineers graduating this year is not in what they want... but how sure they're becoming about what they're looking for. Almost everybody's looking for something special..."**

A large percentage of the job turnover in recent years can be credited to students' rejection of job-aid, say the colleges. "Industry would benefit if it would realize that the glamor treatment on job opportunities never pays off." One year the company may succeed in gaining its quota, but the word's sure to leak back to the campus "that things aren't what they were cooked up to be."

**Military Bite:** The draft's taking (as in recent years) a large segment of this February's graduates; about the same percentage of men are headed to government plants and the AEC. "Nobody's talking much about it any more," says a West Coast Engineering School. "They're beginning to take military service for granted today."

The picture adds up to a smaller crop of graduating chemists, engineers this February-less chance for competing firms to fill their manpower needs because of prior commitments, strong personal prejudices. June graduates may swell the tide, but placement heads think the outlook's not apt to change much before 1955.

## III Winds and Good

For importers of organic chemicals, 1954 was off to a good start this week following two victories on the customs front. Conversely, domestic producers of naphthenic acids and coal-tar chemicals felt that the new year began on a rather sour note.

• Reversing last September's order to cease giving aid and guidance to importers, the Customs Bureau has issued instructions to customs appraising officials to furnish the latest information as to dutiable value in response to requests by importers or their brokers, where it is reasonable to assume the customs men may have data not readily available to the importers. The decision resulted from arguments by foreign trade groups that relevant American selling prices of coal-tar products, as well as foreign market appraisals under other sections of the tariff, were unobtainable by them.

• The Customs Court has upheld Esso Standard Oil in its protest claiming free entry for naphthenic acids (CW, Nov. 28, '53). Finding was made under para. 1733 of the tariff (distillates from petroleum) and the court ruled this paragraph is not limited to hydrocarbons or to products obtained solely by distillation. In the opinion written by Judge Irvin Mollison, the paragraph was written by Congress to give free entry to certain products of the petroleum industry, and it is proper to take judicial notice as to the methods used by the industry to obtain these products.

## First in Fourth

Possibly the last ballot has been fired in the two-year Kentucky feud for bargaining rights for the Du Pont neoprene plant in Louisville (CW, Sept. 19, '53). Overruling protests by the International Chemical Workers Union (AFL), the regional National Labor Relations Board has certified the Neoprene Craftsmen's Union as having received a valid majority in the challenged fourth election. The vote was reported to be NCU 740, ICWU 717.

Still pending in local courts is a \$225,000 civil suit brought by the ICWU charging the craftsmen's union with libel. In a handbill distributed just before the fourth election, the word "racketeers" was said to have been used in reference to the ICWU organizers.

The battle began in the fall of '52, when the independent Affiliated Workers of Kentucky, later disbanded through inner strife, was challenged

by the AFL group. In the first election, five unions contended, none got a majority. NCU pushed ahead in the runoff, but the vote was protested and NLRB upheld the protest. Another election gave ICWU the lead, but Du Pont and the defeated NCU protested illegal influence. As a result the fourth election was ordered and NCU came out on top. Now that this has been upheld, ending more than two years with no union representation, NCU's Pres. Lee Cooper will immediately open negotiations with the company for a contract.

## A Friend in Need

Just as the "super-pure food" proponents intensify their campaign for stricter laws on chemical additives (CW, Nov. 28, '53), along comes an authority on food with a friendly word for makers and users of additives.

Many common foods contain chemical additives that improve taste as well as nutritive value, says Yale's Willard A. Krehl, associate professor of nutrition; and "judging from the absence of case reports in medical literature, one can hardly say there's a very clear and present danger to the public." He contends that it's not consistent to object to food additives and say nothing about naturally occurring food substances "which can be demonstrated under exaggerated experimental conditions to have harmful properties."

## COMPANIES . . .

**United Dye and Chemical Corp.**, Belleville, N.J., has acquired controlling interest in the Camden Forge Co., offers to buy all the rest of Camden's issued and outstanding stock at \$17.50/share.

**Southern Cement Co.**, Birmingham, Ala., has started construction work on a new portland cement plant at Roberta, Ala., expected to be ready for production in mid-'54. It's the first major expansion of the 52-year-old company since its inception.

**Linde Air Products Co.** has started digging its water supply wells for a projected silicon-producing plant at Long Reach, La. There will be two wells, company officials say, located fairly close to the Ohio River bank. Engineering work concerned with installation of railroad sidings is reported near completion.

**Rayonier Inc.** will build a plant to produce an extract connected with its

pulping process at Hoquiam, Wash., company spokesmen say. Production's due to start sometime in February. Raw material for the operation will be a "low-cost product now available in connection with cellulose production" currently under way at Rayonier's pulp plant at Hoquiam, which uses an ammonia-based pulping process. It sounds like lignin, but company officials won't confirm or deny it.

**The Sun Construction Corp.**, Knoxville, Tenn., has been awarded a \$654,271 contract to build solventless extrusion facilities for the Redstone Arsenal, Huntsville, Ala. Work will include construction of three buildings to be used by Rohm & Haas personnel currently engaged in experimental research and development work on solid propellants for rockets.

**Du Pont's** plan to sell the houses it owns in Deepwater Village, near its Chambers Plant, has been dropped for the time being. In keeping with an over-all policy to dispose of houses it owns in other communities, the company last month had stated its intention to offer the places for sale, subject to removal. But representatives of the settlement appealed to management to alter its plan, declared the move would make a ghost town out of the community. Wilmington officials are reported to have taken special consideration of the fact that several stores in the area immediately filed notice of closure, schools in the vicinity registered protest.

#### EXPANSION . . .

**Natural Gas:** Four natural gas companies have applied to the Power Commission for authority to build transmission facilities estimated to cost over \$168 million—including a pipeline from Louisiana to Michigan. American Louisiana Pipe Line Co., Detroit, proposes a 1,289-mile system (capacity, 300 million cu. ft./day) to cross Kentucky, near Slaughters, Webster county; Michigan-Wisconsin Pipe Line Co. and Michigan Consolidated Gas Co. would build facilities to receive the new gas supplies. Further: Texas Gas Transmission Co., Owensboro, Ky., wants to build units to enable it to sell about 51 million cu. ft./day of gas to American Louisiana at a connection near Slaughters.

**Aluminum:** Production is about to begin at Reynolds Metals Co.'s aluminum reduction plant at Arkadelphia, Ark. Total cost of the operation: \$33 million.



**SPEARING DIVERSIFICATION:** President Evans, vice-presidents Ingle, Sargent and Geisinger have led the shift-over.

## Coming Full Circle

For years, Diamond Alkali Co. complacently stuck to its knitting as a major producer of basic inorganic chemicals. Brain child of a group of Pittsburgh glass manufacturers intended to provide a steady source of soda ash for the glass industry, the company as late as 1946 owed 48% of its sales volume to the production of alkalis, 3% to organic chemicals. But today—a scant seven years later—diversification into organics has progressed to a point where they now account for 20% of sales, are due to climb another 5% upward this year. Behind the major change-over in company policy has been Diamond's president (and first director of research) Raymond Evans. A chemical engineer by trade (though without degree) and grandson of one of the company's founders, Evans in his Princeton days admittedly wasn't sure in what direction his interests in the chemical industry lay. To learn the business, he spent five years at Diamond's Painesville, O., plant—working in the millroom, process, caustic and lime kilns. As his familiarity with company business grew, Evans' convictions on two scores were correspondingly strengthened:

- Diamond's growth potential was seriously handicapped by a lack of research facilities.
- Though Diamond was making money, it wasn't keeping pace with the rest of the chemical industry.

Determined to rectify matters, Evans and a staff of 10 assistants in 1940 took the first step in a program that was eventually to set major changes percolating throughout the company. Their purpose: to look into the development of new products; their stated objective: "to take advantage of the raw materials and products currently in use . . . with an eye to pushing those with the greatest growth potential."

Because the company knew how to make and use chlorine, and since its future seemed bright, the researchers started to explore in that field. During the war, emphasis was diverted somewhat (Evans was managing the magnesium plant Diamond was operating for the government) but the goal was not lost sight of. By 1945, the years of patient plodding began to pay off.

First to come off production lines as a product of Diamond research was Chlorowax, a chlorinated paraffin used widely in wartime for flameproofing and more recently as a plasticizer and oil additive. Next in line: perchloroethylene and polyvinyl chloride—outgrowths of Diamond's venture in carbon tetrachloride as a means of getting rid of excess chlorine.

The polyvinyl chloride project was an especially sweet plum to Diamond management since it involved a special process for making PVC from ethylene (rather than from acetylene) . . . "at a lower than normal cost." The total

capital investment at the Houston plant site, says Evans, was only a third of what it would have been for a plant of similar capacity in the North using an acetylene process.

Bright prospects in the insecticide field led to another step in the company's bid to gain a foothold in organics. Acquisition of Kolker Chemical Co. in 1951 was a natural, in that it dovetailed completely with Diamond's growing expansion in chlorine-based products. And purchase of Belle Akali early last year gave Diamond a going business plus a process for making methyl chloride, methylene chloride, and chloroform.

**Working Backward:** In view of its rapid and various product additions in recent months, it's natural that Diamond has had to look around for sources of raw materials not previously needed. The next logical step, outsiders might infer, is a step in the direction of vertical integration. But Executive Vice-Pres. John Sargent says, "As long as we can buy on a

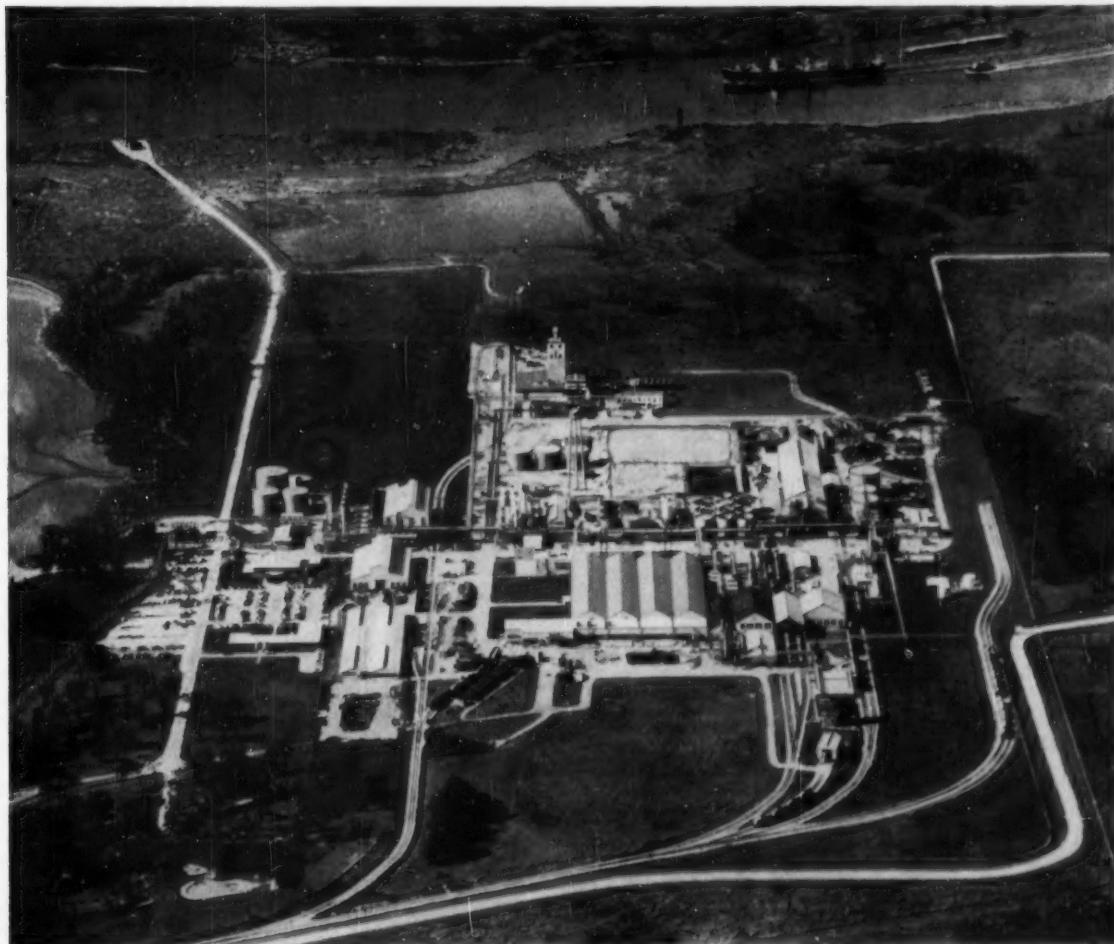
competitive basis, we would prefer to upgrade into higher-priced materials rather than to integrate back." That doesn't count out the possibility that Diamond may in the not too distant future "reach the point where integration would be economically desirable . . . but the time isn't ripe yet."

Right now company officials (though confident 1954 will show improvement over 1953 saleswise) are calling a temporary halt to expansion planning. "This year we'll concentrate on consolidating our gains . . . but just to be sure we don't overlook any good bets, we're upping our research budget again."

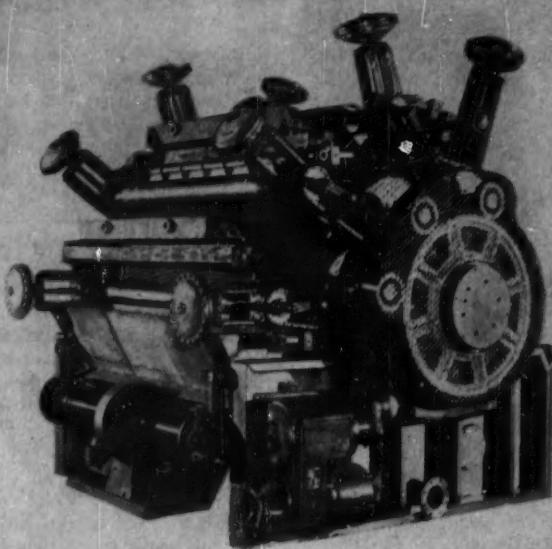
**Corporate Profile:** So far, management agrees, Diamond's diversification has been pinned to chlorine. "That's natural," Sargent points out, "when you note that since 1946 the company's chlorine production has increased 500% . . . now accounts for 10% of total U.S. production." But geographical diversification, too, has played its part in the company's big

policy switch. Eight years ago, with nine plants, Diamond derived 95% of its earnings from the Painesville, O., plant alone. Today, with 14 plants, scattered all over the country, Painesville contributes 45% to the earnings platter. At Houston (besides its organic plant which came on-stream last July), Diamond produces benzene, DDT, chromates; at Emeryville, Calif., it turns out detergents; at Belle, W. Va., methyl chloride, methylene chloride, chloroform, etc.

This rapid broadening has triggered structural changes of an organizational nature, too, in recent months. Under the Evans-Sargent regime, Diamond has initiated a budgetary control system, simplified its internal structure (by weeding out a flock of corporate units that diverted capital, didn't contribute materially to the over-all earnings picture), streamlined management responsibilities. "Right down the line," muses Evans, "we somehow accomplished major changes with relatively little upheaval." Top-manage-



SEAT OF ORGANIC DEVELOPMENT: Diamond's Houston plant's organic products now account for 20% of total sales.



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## B & I . . . . .

ment men were left pretty much intact in manufacturing areas; the big switches came in the administrative end of Diamond's setup. "After we explained what we wanted to do, and how the company would profit . . . we got cooperation right down the line," echoes Sargent.

"Cooperation has extended even into the area of labor relations," they concur (CW, Oct. 31, '53). After a long history of strife at Painesville, management and labor representatives sat down together in 1950 to write the company's first three-year contract; late last year it was renewed for another two-year period.

Though the picture's rosy now (sales last year were up some 14%), Diamond executives look for even bigger returns on their revitalization program this year. Over the long haul they'll keep a firm footing in the basic chemical picture ("because of its long-term stability"), but you can look among the organics for the greatest growth.

"In effect, the company has come full circle," says Evans. Born as the expression of a need for raw materials, it's today creating its own demand for other sources of basic materials. Where diversification will eventually lead, no one's even guessing—but if present enthusiasm in Cleveland is any criterion, Diamond's on the way to an even more striking face-lifting in the years ahead.

### **High Trump Card**

Toeing a cautious path so as not to prejudice upcoming diplomatic negotiations between Great Britain and Iran, representatives of eight of the world's largest oil companies met in London last month to discuss proposals for splitting up purchase of Persian oil supplies. Host of the get-together: The Anglo Iranian Oil Co.; invited guests: five U.S. companies, one Dutch firm, one French company.

Stressing the fact that talks were at best "only tentative and hypothetical," AIOC spokesmen left little doubt in the minds of observers that Britain will use the outcome of the agreement between Anglo-Iranian, Standard Oil of N.J., Standard of Calif., Texaco, Socony, Gulf, Shell and France's Compagnie Francaise des Petroles as a strong bargaining point in the forthcoming bartering with Iran over British interests in the oil fields. Best guess as to the split agreed upon: AIOC will get a 50% marketing right; the other companies involved will equally divide seven ways the remaining half.

A 493

There's no way to judge yet whether or not Iran will accept British proposals, but oil spokesmen are optimistic over the possibility of at least affecting a modest start by persuading the Iranians to release 1.5 million tons of refined products now held in stock at Abadan. Restarting refineries and working out compensation for AIOC are far thornier problems, could well take years to thrash out.

For the British, the switch in approach to the Iranian oil tangle is a complete reversal of policy since the days of Mossadegh. Then, the British quite apparently felt that all they could hope to salvage was compensation; now compensation is soft-pedaled, and Britain is concentrating first on getting the oil rolling to market again.

Underscoring British optimism today is AIOC's current willingness to invest considerable sums in restarting operations. Price tag on the move may run to \$50 million, but in view of the long-range prospects of the worldwide oil market, it could be money well spent.

Both diplomats and oilmen alike today seem to be looking ahead a decade, when loss of the Abadan investment (which reduced Britain's control of production and proved reserves in the Middle East from 51% to less than 33%) could be costlier on the basis of loss of foreign exchange than on a dollar-loss basis. Further: current thinking is that by 1960 the question of compensation for AIOC will look quite insignificant against the problem of Britain's income from the sale of oil in the Middle East.

It all adds up to a far more reasonable approach to a bad diplomatic tangle when talks do recommence, and U.S. companies may well be credited in part for the British backtracking tactics.

## LABOR . . . . .

**One Over, Three On:** The holiday spirit helped to settle one chemical strike in friendly manner, but three other disputes of chemical and pharmaceutical significance continued.

- In Carteret, N.J., the amiable strike (*CW Newsletter*, Jan. 2) conducted by Local 144, International Chemical Workers Union (AFL), ended with the cordial signing of a new one-year contract with Westvaco Chemical Div. of Food Machinery & Chemical Corp. Wages will go up by 8¢/hour and the company will pay costs of the pension plan.



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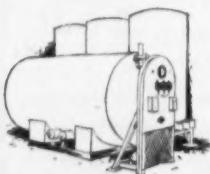
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#### B & I . . . . .

• There was no letup in the strike by some 3,800 members of the United Gas, Coke & Chemical Workers (CIO) against Merck and Sharp & Dohme plants in Pennsylvania and New Jersey, despite the arrival of federal and state mediators. Merck has made a "final" proposal that the company says includes new benefits worth 22¢/hour.

• Construction of Chemstrand's big nylon plant near Pensacola has been held up by picket lines set up by 70 members of the AFL Operating Engineers, whose dissatisfaction has been variously reported as due to work assignments and to the way their work has been supervised. About 4,000 other workers employed by Du Pont's construction division were idled by the strike.

• No shortage of containers has resulted as yet, but the strike by the United Steelworkers (CIO) rolled on against American Can Co. and Continental Can Co. A company official said that no progress has been made toward settlement, with the union demanding benefits worth about 26¢/hour and management offering an 8½¢ increase in basic wages plus 2¢/hour in vacation improvements.

**Rap at Unions:** Whether labor unions really have had a measurable effect on wages in the U.S. is the question raised this week by the U.S. Chamber of Commerce. Using Dept. of Commerce figures, the Chamber says that labor's share of the total national income was 66% in 1936 and 66.3% in 1952, with only minor changes from year to year. In some instances, the Chamber contends, unions have held wages down. Concludes the business spokesman: "Market forces account for basic wage changes" for all workers, union and nonunion.

**Checks on Unions:** Two recent decisions tend to give employers a stronger hand in dealing with labor unions.

• NLRB has junked its 1951 ruling that when an employer discusses unionism or bargaining matters in a speech to his employees during working hours, he must give the labor union equal time and opportunity to address the workers. The CIO attacks this reversal of policy as "an antilabor amendment to the Taft-Hartley Act."

• A Michigan circuit court has ruled that a union may not bargain for a contract clause restricting the use of labor-saving devices. The court held that union demands must have "reasonable connection" to wages, hours, health, safety, union repre-

sentation, protection against labor abuse, or other conditions of employment. The National Federation of Salaried Unions charges that any limitation on bargaining goals is "totalitarian."

**Straws in the Wind:** Breaking away from the old left-wing United Electrical Workers (Ind.), technical employees including laboratory workers and draftsmen at Westinghouse's Newark plant voted to be represented by the Federation of Westinghouse Independent Salaried Unions . . . . By a vote of 45 to 3, employees at the Ontario Plastics plant in Rochester, N.Y., decided not to be represented by a labor union, thus rejecting the bid of the AFL Teamsters.

#### LEGAL . . . . .

**Gas Control:** Of concern to chemical and petrochemical companies across the country are five current hearings and law suits dealing with the sale and control of natural gas.

- Latest explosion in the Federal Power Commission-Phillips affair over FPC regulation of interstate gas sales (CW, Dec. 26, '53) was testimony of Gov. Edward F. Arn of Kansas before a Senate subcommittee. Arn wants Congress to write into the Natural Gas Act a clause exempting gas producers' exploration, production and sales from FPC regulation. He says the ruling by a U. S. Court of Appeals that FPC has such authority "can only discourage the prospective investor," threaten the country's future oil supply.

- Hearings have been scheduled by the U. S. Supreme Court for this week on the appeal by two pipeline companies from a Texas Supreme Court decision upholding the constitutionality of Texas' gas gathering tax.

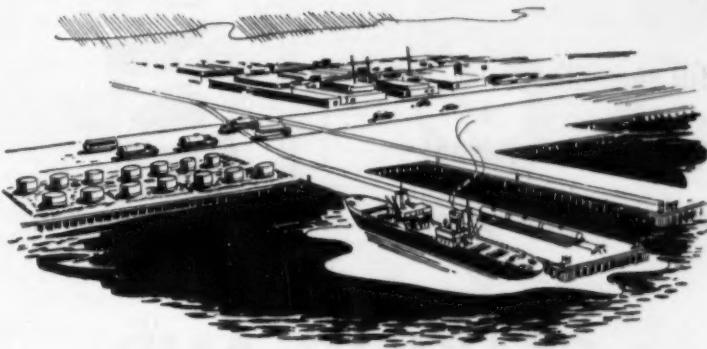
- Oklahoma's State Supreme Court has taken under study an appeal by those same pipeline companies against a corporation commission order fixing gas prices within that state. If the commission's order is upheld, producers Panoma and Phillips Petroleum will each receive more than \$1 million, royalty owners will get higher payments.

- In South Carolina, the State Public Service Commission has announced it will protest before the FPC the state's proposed zoning and rate for natural gas, which the commission claims will make natural gas cost 50% more in South Carolina than in Georgia.

- In yet another action, Reynolds Metals has asked the Arkansas Public

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B & I . . . . .

Service Commission to suspend for six months the new rate schedule requested by the Arkansas-Louisiana Gas Co. Reynolds, using 164 million cu. ft./day for four plants, claims the rate rise would cost it \$639,000 more a year at two plants alone. Reynolds Mining Corp., a recently formed subsidiary, has announced discovery of a new oil well and a new gas well; the company hopes to be able to supply its own natural gas if fuel costs keep going up.

**Merger Troubles:** The government's trust-busters have had their day in court on the Justice Dept.'s opposition to the merger of Wallace & Tiernan and Novadel-Agene (CW Newsletter, Dec. 19, '53). Worried about the possibility of losing a defendant in pending Sherman Act suits, the government is asking first, a preliminary injunction against the merger, and second, an order that W&T sell its present holding of Novadel stock. Company attorney Charles Tuttle says the government moved too slowly, that the merger went into effect Dec. 10, the day the government intervened. Federal Judge Edward Day in Providence, R.I., has taken the government's motion under advisement.

**Food Colors:** A hearing has been ordered, starting Jan. 19, by the Food & Drug Administration, on its projected ban on three widely used coal-tar food dyes (CW, Dec. 12, '53). Following complaints that Orange 1, Orange 2, Red 32 had been used in candies that gave some children post-Halloween bellyaches, FDA conducted animal tests that were, a spokesman said, "very impressive," although "amounts of the colors ingested by people eating normal diets of ordinary food is so small there should be no cause for apprehension." The spokesman also said the agency has no other evidence that the colors have affected humans.

**Dominion Law:** Fifth research book in the "Food Law Institute Series" is the up-to-date "Canada's Food and Drug Laws," Commerce Clearing House Inc., 1953, 1,138 pp. Written by Robert E. Curran, Q. C., of Ottawa, legal adviser since 1945 to Canada's Dept. of National Health and Welfare, the book is an annotated and indexed compilation of Canada's food, drug, cosmetic and other related laws, Dominion and Provincial, up to and including an act passed by Canada's Parliament April, '53, scheduled to come into force early this year.

**Tax Judgment:** In Denver District Court, Judge Robert H. McWilliams has ruled that the Colorado revenue department acted properly in charging \$31,350 taxes and interest against damages won by the Velsicol division of Arvey Corp. against Julius Hyman & Co. in a suit over insecticide patent rights.

#### FOREIGN . . . .

**Glycerine/Great Britain:** Great Britain has signed an agreement with Argentina whereby Argentine firms will supply 500 tons of glycerine to British manufacturers early this year. The deal is said to be the result of Argentina's surplus of glycerine, caused by slackening exports to the United States.

**Japanese-Chinese Exchange:** Negotiations between China and Japanese manufacturers of antibiotics regarding export of streptomycin and penicillin valued at \$500,000 are nearing completion this week. Pending settlement of payment details, shipments should begin rolling within a month. The deal, says Japanese manufacturers, will mark the first major export of Japanese streptomycin since the inception of the industry in the Islands in 1950. Production—now running at roughly 3 tons/month of streptomycin, 3.5 million units of penicillin—is due for a considerable boost by midyear.

**Sulfur/France:** Sulfur is being produced from natural gas for the first time in France at the Berre-L'Etang refinery of the French oil company, Compagnie de Raffinage Shell-Berre. Production's calculated to run between 4,000 and 5,000 tons this year.

Since current sulfur production in France totals about 15,000 tons/year and domestic requirements amount to 50,000 tons the new facilities will add up as a substantial saving in foreign currency to French consumer industries. At present, the bulk of French imports of sulfur comes from Italy and the United States.

**Ammonium Nitrate/India:** Two U.S., two German, and an Italian firm have been asked to submit bids to establish a urea-ammonium nitrate plant at Sindri, India. Using coke-oven gases as its raw material, the plant will produce 90 tons of ammonium nitrate daily, will be designed to allow for future expansion if it's decided at a later date to utilize up to the limit the 10 million cu. ft. of gas available at the Sindri plant site.

**Japanese-Indonesian Accord:** Within

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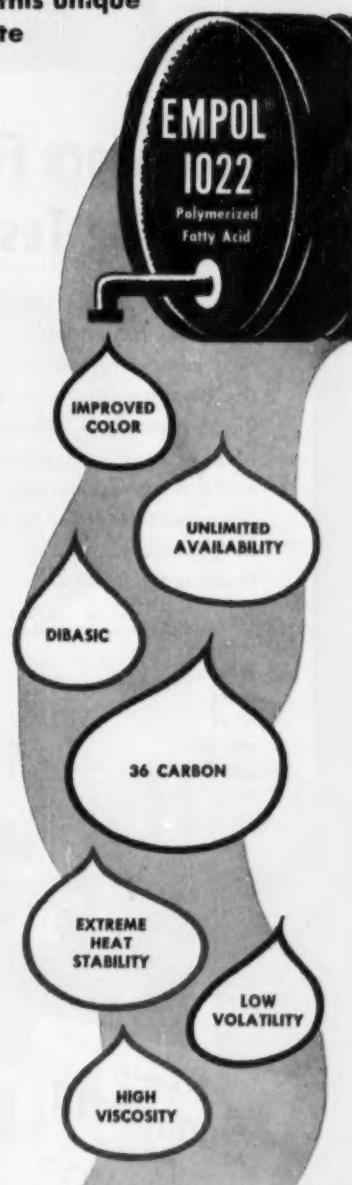
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# Sonneborn Scrapbook - 1943

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### B & I. . . . .

the framework of Japanese reparations to Indonesia (the amount is still undecided), both Indonesia rubber growers and Japanese processing firms are speculating as to the possibility of joint cooperation. Sources in Toyko reportedly say that Japan has "ready and available" facilities to process 10,000 tons of Indonesian rubber annually . . . "when and if the total amount of Japan's war debt can be unscrambled."

### KEY CHANGES . .

**Lee V. Dauler**, to president, and **D. W. Kelso**, to vice-president, Neville Chemical Co., Pittsburgh, Pa.

**John A. Sibley**, to the board of directors, Rayonier Inc., New York.

**Thomas Crawley Davis**, to director, vice-president and member of the executive committee, Du Pont Co., Wilmington, Del.

**Elmer L. Sevringshaus**, to vice-president in charge of clinical research, Hoffmann-La Roche Inc., Nutley, N.J.

**William J. Stewart**, to general manager, Kaylo Div., Owens-Illinois Glass Co., Toledo, O.

**Reid G. Fordyce**, to director of development and technical service, Plastics Div., Monsanto Chemical Co., Springfield, Mass.

**John D. Grothe**, to vice-president and director, and **Frank H. Conover**, **Harold B. Coulter**, **Douglas C. Reybold** and **Elliott J. Roberts** to vice-presidents, The Dorr Co., Stamford, Conn.

**George H. Barlow**, to purchasing agent, Jefferson Chemical Co., Inc., New York.

**William Johansen**, to vice-president in charge of sales, Magnesium Co. of America, East Chicago, Ill.

**Milton L. Herzog**, to general manager, Film Div., Olin Industries, Inc., Pisgah Forest, Ill.

**Charles A. Kline, Jr.**, to first assistant treasurer, Du Pont Co., Wilmington, Del.

**Fred W. Marquart**, to vice-president and treasurer, Hyland Laboratories, Los Angeles, Calif.

**R. Blayne McCurry**, to president and director, Schenley Laboratories, Inc., New York.

**Herman R. Thies**, to general manager, Chemical Products, The Goodyear Tire & Rubber Co., Akron, O.

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# Drug Industry: Pause

by Robert F. Larsen, Freda K. Abel and Arthur E. Foden  
Arthur D. Little, Inc., Cambridge, Mass.

"Wonder drugs" have reshaped the pharmaceutical industry, now leveling off as overproduction and competition pare profits.

The outlook is for continued—though less spectacular—growth, with antibiotics still the leader; high research expenditures; greater emphasis on foreign markets.

TABLE I  
Total U. S. Drug Sales at Manufacturers' Level  
(Millions of Dollars)

Ethical sales	1939	1949	1950	1951	1952	1953
Antibiotics:						
Penicillin.....	124		130	250	110	120
Streptomycin.....	35	160	33	60	45	48
Broad spectrums.....	...		125	145	150	137
Others.....	1	2	5	460	314	328
Vitamins and hematinics.	17	136	140	180	190	195
Endocrines:						
Cortisone and ACTH.....	16	70	75	100	103	110
Others.....	16	70	62	65	67	67
Sulfonamides.....	5	31	39	53	48	48
Antihistamines.....	.	14	28	46	48	48
Barbiturates.....	9	30	32	36	40	44
Biologicals.....	9	29	31	37	44	46
Acetylsalicylic acid.....	5	12	14	15	19	20
Others.....	88	232	208	173	139	140
Total ethical sales.....	149	714	857	1,100	945	979
Proprietary sales.....	152	451	480	500	518	530
Total drug sales.....	301	1,165	1,337	1,600	1,463	1,509

Pharmaceuticals have shown a remarkable growth rate in the years since World War II, but events in the last year appear to indicate a slackening or leveling-off period of unknown duration.

Magnitude of the changes in this industry is indicated by the growth of the total sales of U.S. companies, at manufacturers' level, from an estimated \$301 million in 1939 to an estimated \$1,509 million in 1953. Al-

though most of this surge occurred in ethical sales—from \$149 million in 1939 to \$979 million in 1953—a considerable increase was registered in proprietary sales—from \$152 million in 1939 to \$530 million in 1953.

# in a Miracle Climb

Average annual growth rate in that period for the ethical drug industry is 14.4%; for the proprietary drug industry, 9.3%.

Extrapolation for 1954 gives a sales figure of \$1,120 million for the ethical segment, \$579 million for the

proprietary segment, as shown in Chart 1.

But the high figure for ethical drugs in 1954 based on the average annual growth rate of 14.4% is a reflection of rapid growth from 1947 to 1951 due to the "miracle drugs." And since no

new "wonder drugs" of the dimension of Aureomycin, for example, are anticipated for 1954, the growth rate should be adjusted. Such an adjustment gives a total ethical estimate of \$1,020 million in 1954.

For the proprietary industry, which



**RESEARCHER AND TEACHER**, Robert F. Larsen is now with the company's Industrial Economics Staff. With a B.S. and a Pharmaceutical Chemist degree from Massachusetts College of Pharmacy, and after special studies at Harvard, Boston University and Massachusetts State Teachers, Larsen worked as a hospital pharmacist, did medical detailing and selling, research in manufacturing and selling pharmaceuticals, product development, and sales training, and taught pharmacy, organic chemistry, math and materia medica at Franklin Technical Inst.



**A MARKET EXPERT**, Freda K. Abel has been researching and administering in the company's New York Office since 1945. With a B.A. in chemistry from Colby and graduate work in research management and chemical engineering economics at New York University and Polytechnic Institute of Brooklyn, she has done much literature searching and report writing, assisted in market research studies and cooperated in a complete analysis and characterization of the drug industry for a leading chemical manufacturer, a customer of Little, Inc.



**A DIVERSIFICATION MAN**, Arthur E. Foden has been with the company since Sept. '52, doing extensive work in sales training analysis, as well as market research work in antibiotics, cortisone, dextran and niacin, and diversification studies for pharmaceutical and chemical houses. A member of the American Pharmaceutical Assn. and Kappa Psi pharmaceutical fraternity, Foden is a graduate of Massachusetts College of Pharmacy and a registered pharmacist in the state of Massachusetts, has worked in statistical research for the Research Society, Inc.

is expected to continue to grow at the rate of 9.3%, no modification of the 1954 estimate of \$579 million is necessary.

What forces are behind the changes indicated by these figures? Of greatest impact in shaping the character of the industry were these developments: (1) discovery of the so-called "wonder drugs"—penicillin, streptomycin, broad-spectrum antibiotics, sulfonamides, antihistamines, cortisone, and ACTH—and (2) mass production and continuous process manufacturing methods resulting from efforts to make these drugs available to the public at a low cost.

Table I illustrates the growth in sales of these products and their effect on the industry, pinpoints the introduction of the "wonder drugs." A closer look at these figures reveals that, basically, the drug industry has retained a firm foundation, has even shown moderate growth without them. Unquestionably they have contributed greatly to the sharp rise in sales of the ethical drug industry up to 1951; but in the same manner have contributed greatly to the recession in 1952—antibiotics sales dropped from \$460 million in 1951 to \$314 million in 1952. Without those sales (see Chart 2), the industry displays far less fluctuation.

Table II

Number of Establishments  
in Pharmaceutical Industry\*

	1947	1939
Biological products	85	80
Botanical products	15	17
Medicinal chemicals	92	20
Pharmaceutical preparations	1,163	1,000

\* Source: U.S. Census.

**Stable and Growth-Sure:** Markets for the sulfonamides and antihistamines have held up sufficiently to prove that they have found their proper place and can no longer be classified as "wonder drugs." Chart 2 shows the sales curves of the industry without the influence of all these new

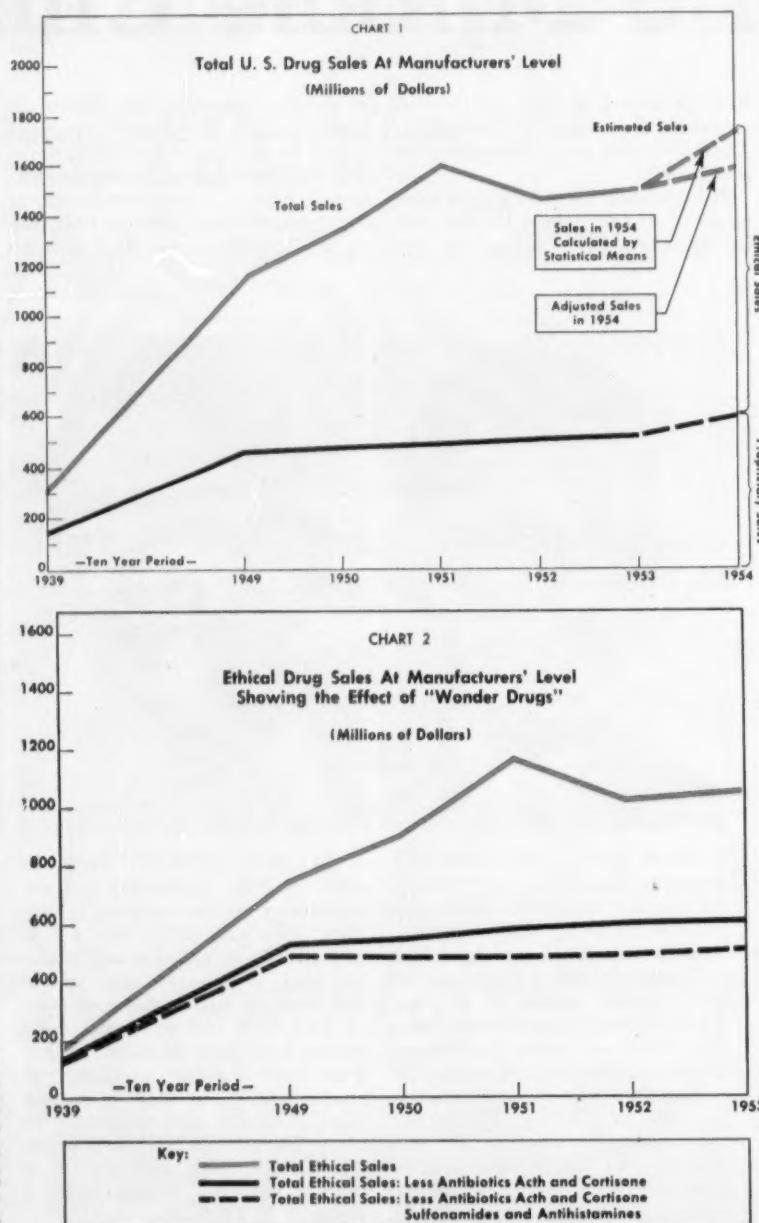
therapeutic agents. Such an analysis reveals an industry of inherent stability that will continue to show growth even if no further "wonder drugs" appear for several years.

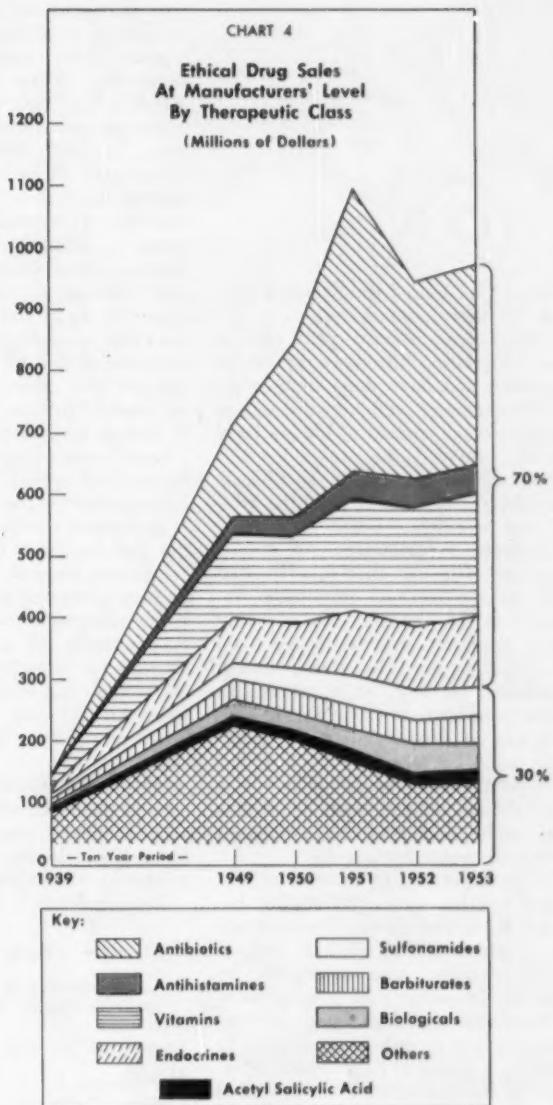
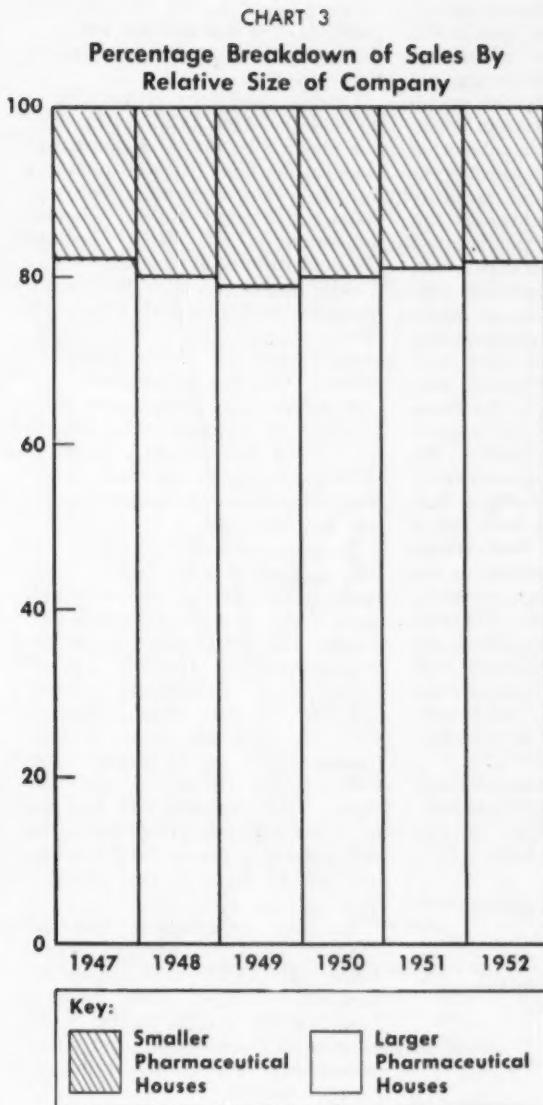
Among the major reasons for the anticipated growth is the close relationship of the industry to the growth in population and to the longevity of the people. Not only is the population expanding, which in itself requires more medicine, but also life expectancy is increasing. Eventually research is bound to solve many as-yet unanswered medical problems, such

as the common cold, influenza, atherosclerosis, arthritis, poliomyelitis, cancer. Solution to these problems will more than likely add new "wonder drugs."

And still further growth may be anticipated from improvements in products already available but now limited because of side reactions.

**Big Get Bigger:** Many people have assumed, because of recent mergers and the impact of antibiotics and cortisone on the growth of the industry, that the large pharmaceutical houses are getting an increasingly greater





share of the total drug market. This is not borne out by sales figures.

Since not all of the annual sales of the drug companies are available, the annual sales of 15 selected ethical houses representing both large and small operations have been considered in this analysis. Their sales comprise a representative sample of the volume of the total ethical-drug industry estimated in Table I. A company doing over \$50 million in annual sales has arbitrarily been classified as a "large pharmaceutical house," and one doing \$50 million and under, as a "small pharmaceutical house."

Chart 3 shows the percentage breakdown of the selected sample of the larger houses and smaller houses.

It will be noted that there has been no significant change over the past six years. The large companies have always been getting a good share of the total market, but the majority of increased sales has been in fields that the small companies have not even attempted to enter.

**Counting the Houses:** The actual number of establishments engaged in the pharmaceutical industry (*Table II*) is probably open to debate, but it's estimated that the count today is approximately the same if not slightly higher than in 1947.

Actually, if sufficient promotional money is available, one can get into either the ethical or proprietary business without spending large sums of

money for plants and equipment, because several good private-formula houses such as Strong, Cobb and Company, Inc.; Arner Company, Inc.; Bundy Company, and Chicago Pharmacal Co. will do a complete job of manufacturing and packaging. All one needs until business volume is large, is a sales organization.

Despite the fact that these private-formula houses play an important part in the industry, their annual sales volumes amount to only about 1% of the total drug industry.

Although having your products made for you may not be the preferred method, several companies that started in this way have been quite successful. Among them are A. H.

Robins, Co., Inc.; J. B. Roerig & Co., and Whittier Laboratories.

Others have started with one or two capsulating machines or tablet machines and have done quite well. Combinations of well-known drugs or special-dosage forms of drugs have usually provided the entree for this group of low-investment, small-scale manufacturing units in both the ethical and proprietary fields.

**Ethicals, Proprietaries:** An ethical preparation is one that is advertised only to the medical profession. Included in this category are not only those products sold exclusively on prescription, but also those usually purchased, at first, on a physician's recommendation, but available to anyone who is familiar with the product's name.

A proprietary preparation is advertised directly to the general consuming public and may be purchased over-the-counter by anyone.

It is important to remember that there can be some overlapping between these two classes. Products are often introduced as ethicals and, if safety permits, may eventually be sold in the manner of proprietaries.

Moreover, although some companies produce in only one category or another, a glance at the roster of members of the American Pharmaceutical Manufacturers Assn., American Drug Manufacturers Assn., and the Proprietary Assn. immediately shows that many companies have interests in both fields. Despite this duplication in products and company interests, it is usually best to consider ethicals and proprietaries separately.

## ETHICAL INDUSTRY

Chart 4 shows sales breakdowns of the major ethical classes of medicinals. It is to be noted that of the groups shown, the three major groups—Antibiotics, Vitamins and Hematinics and the Endocrines—constitute 65% of sales of the industry in 1953.

According to one possible system of grouping, a company may be classified as full-line house, specialty house, or fine-chemical house, but as this

type of breakdown has been constantly shifting, it will not be used in this report. These examples of change show why: Pfizer Laboratories and Merck & Co., Inc., were, until recently, considered as fine-chemicals operations. In 1950, with the advent of Terramycin, Pfizer began directing its interest toward a line of specialty products. It recently added to this group—through the purchase of Roerig, a small ethical vitamin house, and through an arrangement with Syntex S.A. to sell hormones under the Pfizer label. Merck first introduced cortisone under its own label, then merged with Sharp & Dohme, Inc., an "almost" full-line house. The Sharp & Dohme specialists will likely prove a major sales source to Merck in the future, and provide a better marketing organization for the cortisone line.

Looking at the various categories of the industry one finds that certain companies seem to specialize in one or more groups of products, while the larger companies have diversification in practically all groups. Pfizer, for example, is primarily concerned with antibiotics, endocrines, and vitamins, while Eli Lilly and Co.'s line is composed of products from all classifications.

**Antibiotics:** By far the largest single class of products, antibiotics has naturally headlined news of the industry for nearly a decade. Books have been written on the subject.

Despite drops in sales volume, anti-

Table III  
Producers of Antibiotic  
Dosage Forms

Large	Medium	Small
Abbott		Bristol
Lederle	Parke, Davis	Commercial Solvents
Lilly	Sharp & Dohme	Cutter
Pfizer	Smith, Kline & French	Schenley
Squibb	Wyeth	
Upjohn		

biotics will doubtless continue to lead for many years. U.S. Tariff Commission figures have kept everyone well informed on what goes on in the industry, and a complete discussion of antibiotics may be found in several places. Only the present and future position of this group will be discussed here.

Chart 4 shows the estimated sales through 1953. At present, plant capacity exceeds production. Charts 5 and 6 show the major reasons—price declines—for the considerable drop in

value of sales for 1953. Actually both penicillin and streptomycin unit production and unit sales were higher than ever.

Leading companies in the sales of finished packages (Table III) were less affected by the price drops than were smaller firms that sold primarily in bulk, such as Commercial Solvents, Heyden Chemical Corp., Schenley Laboratories, J. T. Baker Chemical Co., and Bristol Laboratories.

Sales figures also show that broad-spectrum antibiotics and other antibiotics except penicillin and streptomycin have not been materially affected. Why the differences?

Penicillin and streptomycin were available to everyone. The government aided in establishing plants in order to gear up for war needs. When production exceeded demand, a price war was inevitable.

Companies that manufactured and sold in finished form had a larger profit spread and were able to absorb more of this drop than the bulk producers. The broad-spectrum antibiotics, Aureomycin (Lederle Laboratories Div.), Terramycin (Pfizer) and Chloromycetin (Parke, Davis & Co.) had the advantage of both trademark and patent protection, as well as having a wide-range spectrum. Parke, Davis, unfortunately, had unfavorable publicity on Chloromycetin and suffered a drastic drop in sales, but sales of the other two remained high and very profitable.

In 1952, erythromycin was announced by Lilly, Abbott Laboratories, and The Upjohn Co., and carbomycin, by Pfizer. These products have captured a small portion of the broad-spectrum market, but have gained in sales primarily at the expense of penicillin.

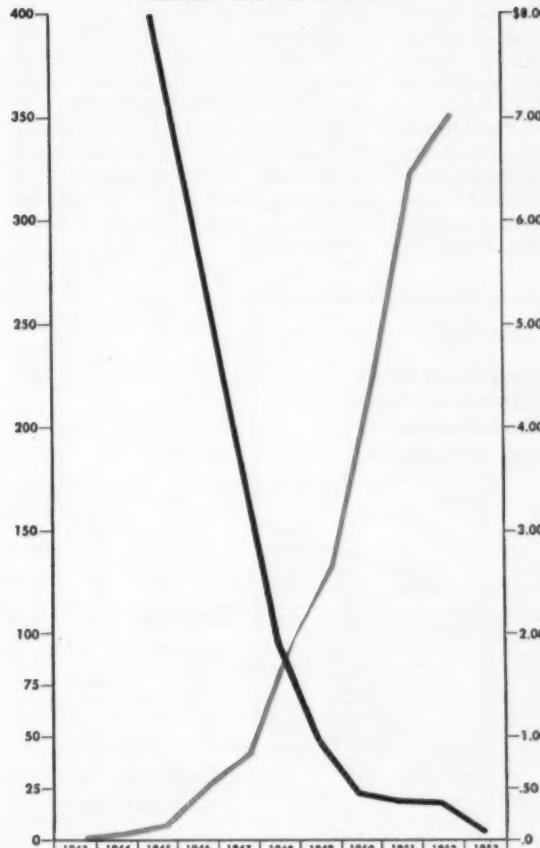
A new broad-spectrum, tetracycline, has recently been developed by Lederle, Pfizer, Heyden, and Bristol. It is a close relative of Aureomycin (chlorotetracycline) and Terramycin (oxytetracycline) and is understood to have a spectrum of effectiveness close to that of the other broad-spectrum antibiotics. A somewhat lower incidence of side reactions is reported for the product.

All companies have applied for patents on tetracycline manufacture and much of its future will depend upon the outcome of these applications. Recent reports indicate that the medical profession would welcome a new antibiotic for treatment of cases of sensitization or resistance; tetracycline should, therefore, fit into the antibiotic picture fairly readily.

It is doubtful, however, that either

CHART 5

## Production and Price of Penicillin

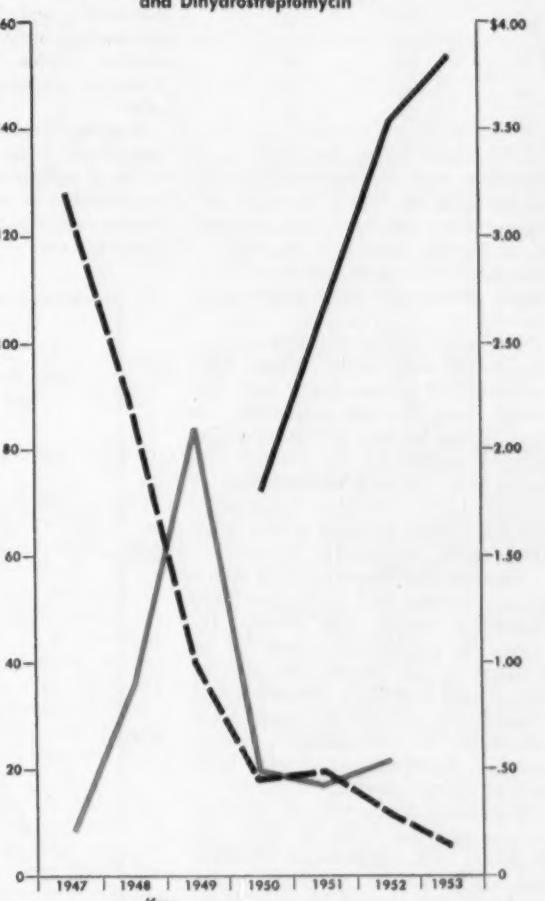


## Key:

- Production in Trillion Oxford Units
- Price in \$ Per Million Units

CHART 6

## Production and Price of Streptomycin and Dihydrostreptomycin



## Key:

- Production of Streptomycin in Million Grams
- Production of Dihydrostreptomycin in Million Grams
- Price in \$ Per Grams

Fisher or Lederle will attempt to supplant Terramycin or Aureomycin with the new tetracycline, although sales will be built partially at the expense of Terramycin and Aureomycin.

This November, American Cyanamid acquired the Antibiotic Div. of Heyden Chemical, including its plant located at Princeton, N.J., all patent rights and processes relating to the manufacture of Heyden's antibiotics. This gives American Cyanamid facilities for the manufacture of penicillin, streptomycin and neomycin, and probably, more important, the rights to any patent position Heyden may have on tetracycline.

Other antibiotics may be forthcoming now that the structural formulas of all three broad spectrums are

known. Such antibiotics are most apt to be of a limited spectrum and designed to hit viruses or fungi—for example, Abbott's brand of fumagillin (Fumadil), indicated only for amoebic dysentery. Major sales of this drug will be in the export field because incidence of the disease is particularly high in the tropics.

Other antibiotics may be effective for resistant or allergic conditions caused by the presently known antibiotics. Further demand for penicillin and other antibiotics is predicted in the animal feed supplements, agricultural chemicals, and industrial applications.

**Endocrines:** Endocrines have been greatly stimulated in the past few years with the advent of ACTH and

cortisone. These compounds are in a period of flux. Price drops have resulted in extensive use of the drugs, but have created a highly competitive market. Merck, Schering, and Upjohn are now the big producers of cortisone.

Upjohn's fermentation process is believed to have the advantage over the synthesis used by Merck and Schering. Monsanto claims a cheap, unlimited source of raw materials for its new synthetic process, but commercial production is probably at least two years away.

Compound F, only recently available in large quantity, looks more promising than cortisone because of fewer side reactions.

Several other companies such as

G. D. Searle & Co., Inc., and E. R. Squibb & Sons are working diligently in the field of steroid research, but have not yet marketed such preparations. Further growth is expected in the steroid field, with new compounds being produced, new uses being found.

The Armour Laboratories dominates the ACTH field, while Wilson Laboratories, Organon, Inc., and National Drug Co. are responsible for most of the balance of the sales. Expanded markets for the product may come from research development of derivatives or vehicles lengthening the therapeutic duration of the drug. Here again, competition is keen.

**Vitamins and Hematinics:** In recent years, vitamins and hematinics have enjoyed a steady sales growth. Increases in population as well as an increase in the normal life span of man should indicate a continuing and expanding market for the future. Most companies in the industry, except possibly Schering and Searle, have several vitamin products available.

Foremost producers of finished preparations are listed in Table IV. Principal bulk suppliers of vitamins, which are not, as a whole, represented in the same table, are Hoffmann-La Roche, Inc., Merck, Pfizer, Commercial Solvents and Distillation Products Industries.

New factors continue to cause changes in the lineup: latest development—*intrinsic factor*—is an unidentified gastric substance that permits effective oral use of vitamin B<sub>12</sub>. *Intrinsic factor* looks promising, and Armour, Organon, Lilly, Wilson, and Difco are the first to produce it. Raw material sources for *intrinsic factor* may have a limiting effect on its

Table IV

Producers Vitamins and Hematinics in Finished Pharmaceutical Form

Large	Medium	Small
Lilly	Abbott	Hoffmann-La Roche
Parke, Davis	Lederle	Merck
Squibb	U.S. Vitamin	Pfizer
Upjohn		Sharp & Dohme

growth—so far, it's extracted only from natural animal sources, which are difficult to obtain.

**Sulfonamides:** American Cyanamid's Calco Chemical Div., Merck, Monsanto, and Hoffmann-La Roche are leading basic producers of sulfonamides (Table V). Dosage forms, however, are successfully handled by others.

Initially it was felt that antibiotics would wipe out the sulfonamides. Sales of sulfonamides, however, have continued to be very stable with many factors combining to boost their use. Their low cost and the absence of side

effects have been important. Furthermore, through combinations of various sulfonamides, the spectrum of activity has been increased. Triple sulfas appeared first, then penicillin plus triple sulfas. Now quadruple sulfas and combinations of triple sulfas with other antibiotics such as Aureomycin and erythromycin have been introduced to the medical profession.

In the last two years a newcomer, Hoffmann-LaRoche's Gantrisin, which is especially useful in urinary tract infections, has become the leading sulfonamide on prescriptions of single sulfonamides.

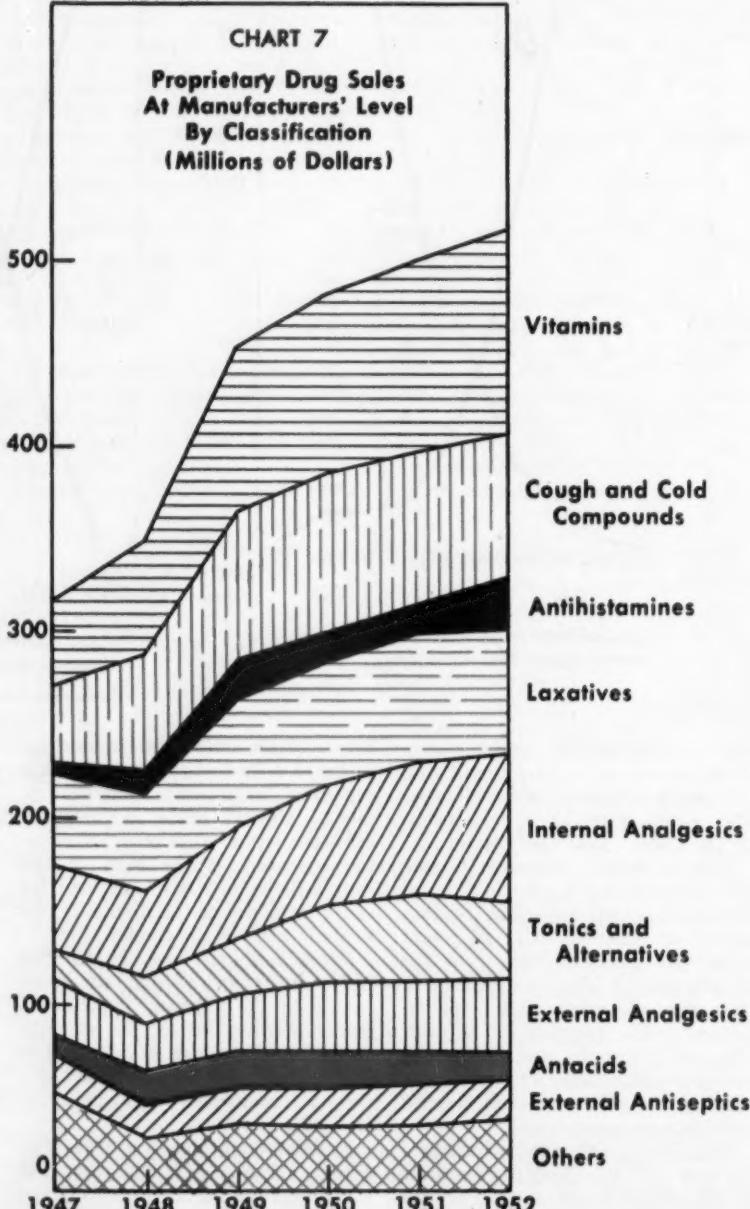


TABLE VII  
Proprietary Drug Sales at Manufacturers' Level  
(Millions of Dollars)

Proprietary sales	1947	1948	1949	1950	1951	1952
Vitamins.....	54	77	97	105	109	114
Cough and cold compounds, plus antihistamines.....	39	65	81	85	88	82
3	6	19	14	11	22	
Laxatives.....	49	53	64	66	69	68
Internal analgesics.....	48	46	60	65	71	76
Tonics and alteratives.....	15	24	29	45	45	41
External analgesics.....	28	23	29	33	34	37
Antacids.....	10	13	17	17	18	18
External antiseptics.....	21	14	18	18	19	20
Others.....	51	29	37	32	36	40
Total proprietary.....	318	350	451	480	500	518

Table V  
Producers Sulfonamides in Finished Form

Large	Medium	Small
Hoffmann-La Roche	Ciba	Abbott
Lilly	Lederle	Parke, Davis
Sharp & Dohme	Schering	Smith, Kline & French
Upjohn	Squibb	Wyeth

**Antihistamines:** Predominant in antihistamines sales are Ciba Pharmaceutical Products, Inc. (Pyribenzamine), Parke, Davis (Benadryl), and Schering (Chlortrimeton). During introductory stages, antihistamines flourished in the form of both ethical and proprietary sales, based on claims of effectiveness for the common cold. Following this short flurry, however, the pendulum swung to ethical sales, which have shown continued growth. Increasing use of the antibiotics, with resulting allergic reactions, has helped considerably to boost the use of antihistamines. Changes in dosage forms should also help to keep sales of this group on a gradually increasing trend.

**Sedatives and Hypnotics:** Lilly and Abbott continue to lead the field of barbiturate manufacture (*Table VI*). McNeil Laboratories, Inc., must be mentioned as a relatively small company that has gained an important place in this group. Barbiturates are continuing to grow in use, but competition from nonbarbiturate sedatives and hypnotics can be expected. Schering's Dormison, a synthetic nonbarbiturate, sleep-inducing sedative, is an example of a type of product that

could well shift the character of products for such uses.

Aspirin or acetylsalicylic acid has often been called "the wonder drug of all time." There are probably more uses for it than for any other drug. Sales have increased not only in ethical combinations but in proprietaries as well; largest sale is in over-the-counter products both alone and in combination. Profits in recent years have come from tradename combinations or various dosage forms such as the children's size and products flavored to appeal to youngsters.

Many other classes of ethical drugs also offer possibilities for increased sales providing new products are developed, and companies whose research can produce a specialty product may expect to gain added sales leading to good profit margins in the future.

Table VI  
Producers Sedatives and Hypnotics in Finished Form

Large	Medium	Small
Abbott	Hoffmann-La Roche	Sharp & Dohme
Lilly	Fellows	Winthrop Stearns
McNeil	Parke, Davis	Bilhuber-Knoll Corp.
	Schering	Smith, Kline Schenley & French

**Marketing Ethicals:** A characteristic trend in pharmaceuticals is the development of drugs that are increasingly potent even in minute quantities. This trend has given rise to close scrutiny by the government's "watch dog" of the public's health, the Food & Drug Administration.

The FDA has tended to become strict in its requirements of adequate proof of a drug's safety and effectiveness before allowing its introduction. Extensive clinical studies are required to prove range of safety and tolerance doses; warnings must be present on labels if there are side reactions, and acute and chronic toxicity studies on animals of different species are necessary. These are but a few of the factors that the manufacturer must check before releasing the drug commercially.

Proof of safety and effectiveness of the modern-complex drug has automatically increased the demand for research and has made it more expensive. Further research expenditures are needed because such compounds are so complex in structure that the development of synthesis and production processes is complicated and difficult.

The nature of diseases for which new drugs are being sought tends to increase the expense of determining the final disposition of the drug. As cures have been found for most infectious diseases caused by pathogenic bacteria, the industry has become increasingly aware of the problem of metabolic conditions and chronic diseases of the aging. Such conditions as atherosclerosis, which develop over long periods of time, may be cured or alleviated by continued prophylaxis. Drugs sold for management of chronic diseases do lend themselves to a large continuing market, but safe use over extended periods also involves a long, expensive testing and checking period before the product is put on the market.

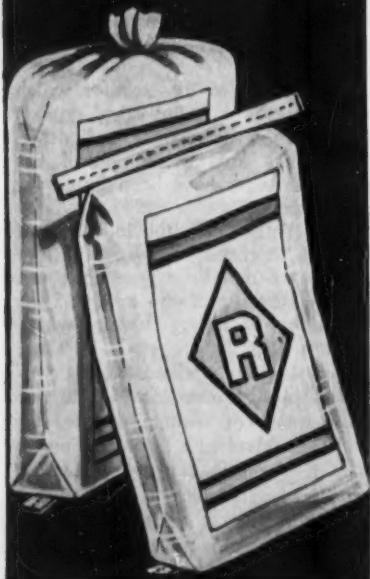
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**C W Report**

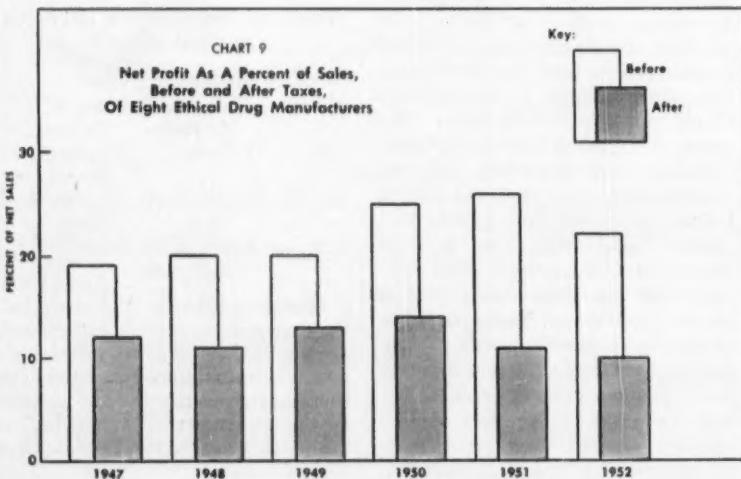
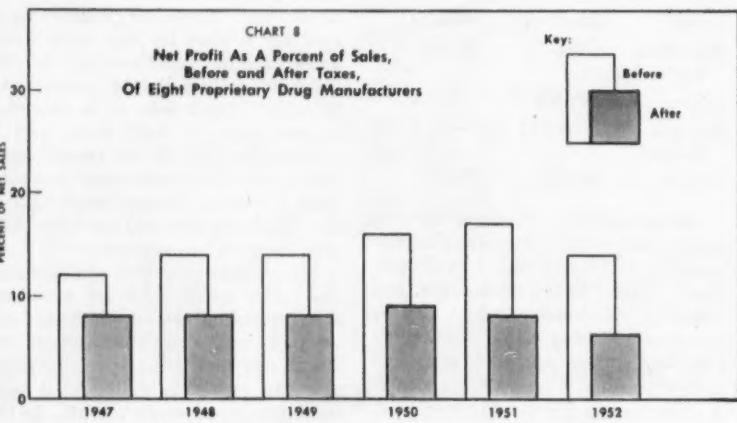
tion is over and FDA has granted an effective application, testifying to the drug's safety, marketing presents a problem. The industry has found that ethical drug markets require specialized sales or detail staffs to sell the product to the physician. Consequently, to insure proper coverage, detail staffs, as a rule, have grown larger and larger.

Many physicians have attempted to decrease the time they give to the

scores of detail men who come into their offices trying to get them to use specific products. How to replace detail men is a big problem, but sooner or later the medical profession will probably show increased resentment to this method of selling.

Other methods, such as direct mail advertising and medical journal advertising, have been effectively used. With few exceptions, however, the sales detail staff has been the most productive approach to selling in this specialized field. Educational programs for salesmen have become an ever-increasing item in the sales-expense budgets.

Adequate distribution is essential for new drugs. A product can "die" if, following a good detailing campaign to physicians, the patient is unable to get his prescription filled at the local stores. Thus the trade has made an increasing effort to see



that drug stores have the new product when it's called for by physicians.

Formerly, most drug houses except Lilly sold direct to the trade and in many instances to the physician. Selling direct has been satisfactory until recently, but now there appears to be a trend toward selling mainly through wholesalers. A few companies have tended to shift to more direct but selected accounts. In either case the object has been to decrease distribution expenses and overhead while maintaining maximum distribution.

The problem of maintaining the market for a product has become more complex recently because of increasing competition and the introduction of new drugs. The solution is not simple. Many markets may be held through increased advertising; making a drug available in different forms such as ointments, tablets, capsules, elixirs, etc., to get maximum marketability of the basic compound; improving the product itself, as in palatability; or lowering costs of production to make prices competitive. Finally, research may add newer drugs for established uses.

Market research can help maintain sales by pointing up areas where markets are most available and where specific diseases occur most frequently. It can also establish the price and package size most suitable for each region.

Sociological changes have resulted in growth in the industry—a trend that's expected to continue. Expansion of health insurance plans over the last few years has put more people in a position to secure adequate medical treatment. Growth in population, too, will account for an increase in drug usage. With the average life span continuing to lengthen, the need for keeping people in productive occupations will open more markets. Education programs are also increasing the number of people who know how to maintain good health. People are consulting their doctors more frequently than ever.

Although the proprietary field has not shown the remarkable gains witnessed in the ethical field, there has been a slow growth that is expected to continue (see Chart 7). Antihistamines created a large new market in 1949, but when they were found to be ineffective on the common cold, sales rapidly dwindled. Over a period of years, the vitamins have contributed large increases. Table VII shows the major classes of proprietaries and their progress over the years.

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**C W Report**

Existing production facilities are generally adequate for proprietary lines, as new products can usually be made in equipment already on hand. They do not require radically new methods of synthesis, as do many of the new ethical preparations, which often represent a complete departure from any previously known product. It is therefore, difficult to visualize any need for expansion of facilities in the proprietary field.

## RESEARCH

Research is considered to be the life-blood of the pharmaceutical industry. Attaining and maintaining a position in the industry over any long periods depends primarily on the ability of the research staff to develop new specialty products. The fact that companies in the industry now budget an average of 3 to 6% and occasionally as much as 10% of the sales dollar on research activities is graphic evidence of the importance of these activities in the mind of management.

Major emphasis in recent years has been placed on the development of new compounds by synthetic methods. One interesting deviation from this general pattern, however, has been the perfection of fermentation methods, especially in the production of certain antibiotics. Upjohn has recently developed a bioprocess for production of cortisone. The possibility of allowing live organisms to produce intermediates that might require many complicated steps if produced by regular synthesis is a new and interesting concept.

Know-how in fermentation process has led such companies as Pfizer, Schenley, and Commercial Solvents to enter the ethical drug industry. Large-volume production of antibiotics by fermentation was responsible for introducing continuous-process operations in an industry that formerly had depended primarily on batch methods. It is anticipated that chemical synthesis will continue to provide the greater number of new products for the industry.

Today it is possible to predict, with fair accuracy, the future progress of a company by examination of the size and effectiveness of its research staff.

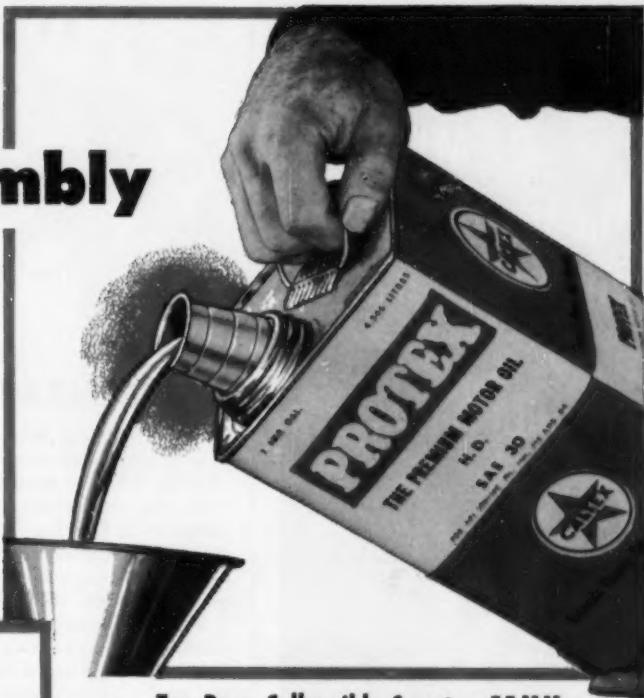
It is from research that new ideas must emerge to form the basis for continuing progress in the field of medicine, and to assure new and useful products that will provide increased sales and profits. But research must, of course, be supported by sound management and adequate production and promotional activities.

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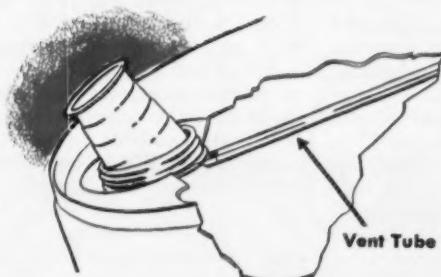


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**Tru-Pour Collapsible Spout —  
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With or without base to accept vent tube.  
Filling opening, 1 1/4"; pouring opening, 1 1/8".



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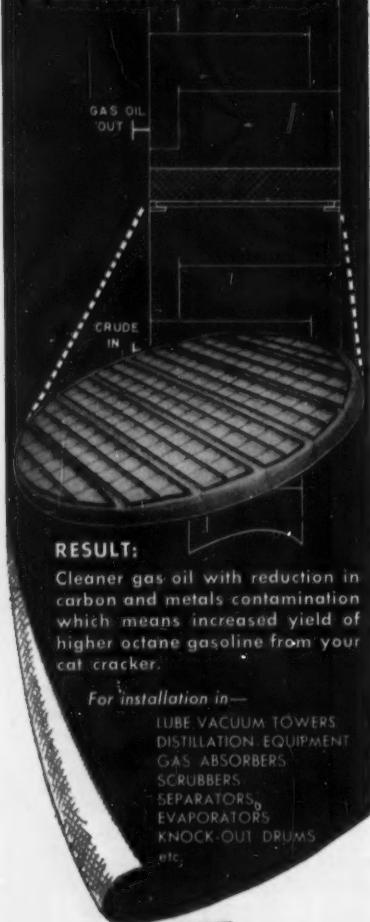
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C W Report

## CAPITALIZATION

Retained earnings have been used to finance most of the large expansion of physical facilities needed to keep up with the strong demand for drug products in the last decade. (Since 1939 the average increase in investment in plant, less depreciation reserve, has been 500-600%.)

Some stock issuance and a small number of bank loans and funded debts have accounted for the rest of the total plant investment.

Although three fairly large mergers have taken place in the industry—Merck and Sharp & Dohme, Mathieson Chemical Corp. and Squibb, and Warner and Chilcott Laboratories, Inc.—the basis for merging was to diversify base of operations and to iron out fluctuations that occur when most of the business is in a single product.

There appears to be no particular trend toward mergers or any trend in varying means of capitalization for the industry. Future expansion, though the rate is expected to slacken, will probably be financed as in the past—chiefly by retained earnings.

## FOREIGN MARKETS

Following the upheavals in the antibiotics (penicillin and streptomycin), the attention of many manufacturers in their efforts to seek other fields has been drawn to the export or foreign markets. In view of the reported increased activities in these antibiotics by foreign manufacturing concerns, the question of present status becomes of interest to the industry.

Sales in the export field are, of course, not new to the larger U. S. manufacturers of pharmaceuticals. In fact many concerns have had from 20% to as high as 50% of their annual sales in the foreign field. A number of the leading U. S. drug manufacturers have currently been publicized as increasing their activity in the foreign drug market.

Figures for U. S. exports of ethical pharmaceuticals seem to indicate that markets in the export field are on the

wane, but this apparent decrease is not an actuality, for the sales dollars or profits from sales in foreign countries coming into the United States pharmaceutical houses are actually increasing.

**New Approach:** The foreign business done by U. S. pharmaceutical firms has changed in method, however. They're now doing more manufacturing abroad—the only means available, due to the current exchange difficulties and restrictions of certain countries, by which American companies can get any portion of these markets.

Competition is becoming increasingly keen in the export field, but drug concerns that have been active in the field for years say that future prospects are encouraging: prospects of growth in export markets are at least equal to growth possibilities in the domestic market—in some instances appear to be even brighter.

In fact, many new concerns in the export field have been even more optimistic than one might expect. The Pfizer firm reported in 1952 that approximately 25% more business was obtained in the export field than formerly. The actual volume of antibiotics exported from the U. S. in 1952 was greater than in 1951, although the dollar volume was lower because of the drastic decline in penicillin and streptomycin prices.

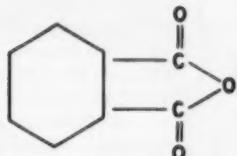
Leading U. S. exporters in the ethical field are Squibb; Parke, Davis; Lederle; Abbott; and Lilly. Sterling, Vick, American Home, Sharp & Dohme, Bristol, Lambert, and Warner-Hudnut lead in the proprietaries. Several other companies are doing large volumes in specific countries.

**How It's Done:** A new company anticipating entering the foreign field might establish a market by several methods. Usually a company starts by supplying the finished product to exporters who in turn sell through agents in a particular country. The firm's responsibility ends on the delivery of the merchandise to some U. S. port for shipment abroad.

The second step is usually shipping to foreign consumers on letters of credit when monies covering such orders are available in the United States. Shipment does not take place until these have been in effect; therefore the U. S. company does not stand to lose on such a transaction. After such a procedure has been established for some time, the next step is usually shipping on letters of credit to distributors in a foreign country who use the manufacturer's name on their products and have assigned areas for distribution. In such cases the dis-

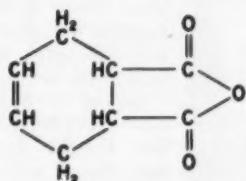
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Solidification Point: 99-101°C

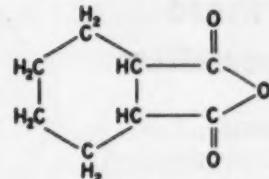
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Solubility: s.s. Petroleum Ether;  
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Clear, colorless, viscous liquid, which freezes to a glassy solid.

Molecular Weight: 154.1  
Solidification Point: 35-36°C  
Boiling Point: 158°C @ 17 mm abs.  
Density at 40°C: 1.19 g./ml.

Solubility: Miscible with benzene, toluene, acetone, carbon tetrachloride, chloroform, ethanol and ethyl acetate. Only slightly soluble in petroleum ether.

Superior intermediate for resins and surface coatings where high solubility, high clarity, low viscosity and lightness of color are essential. Excellent for plasticizers in end uses where improved compatibility, lower viscosity and lightness of color are essential.

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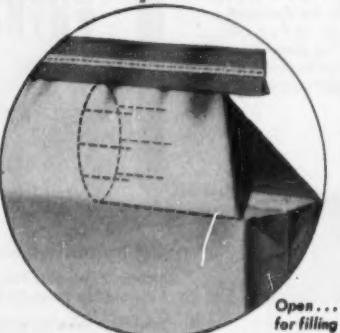
With Bemis B-FLEX Bags, you also get the same bonus you get with all Bemis Multiwalls—**BEMIS MULTI-COLOR PRINTING . . .** your brand at its finest on multiwall bags.

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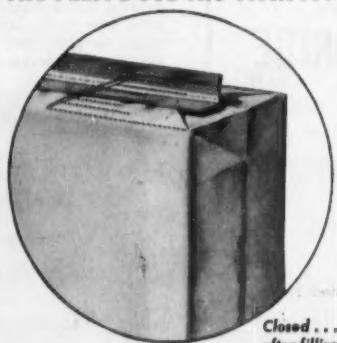
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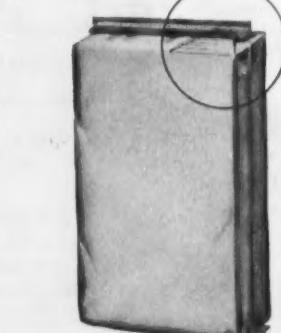


Open . . .  
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### The FLEX Does the Trick . . .



Closed . . .  
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**C W Report**

tributor usually furnishes the salesmen.

After sufficient volume is set up, the next step is to establish sales branches in foreign countries. In such cases the manufacturer ships to its own foreign branches, which in turn furnish their own salesmen, arrange their advertising, etc. As volume increases, the manufacturer may establish facilities for finishing operations, so that material is shipped from the United States in bulk for repackaging or finishing. Later on, when volume warrants, actual foreign subsidiaries for manufacturing are established. In such operations the U. S. company duplicates entirely its domestic manufacturing activity through its foreign subsidiaries.

Specialty manufacturers find that they may often obtain the most benefit from foreign operations by licensing a foreign company to manufacture and sell their products on a royalty basis. This procedure has been quite popular in recent years, and most of the large ethical houses operate this way. However, if there were a free exchange of goods and monies, the most advantageous way of conducting an export business would usually be to carry out all production in the United States and to ship the finished product.

**Lots of Hurdles:** Other problems of conducting business in foreign markets, besides exchange, are licensing and Board of Health regulations, which often dictate the method used by the U. S. company.

Paradoxically, money restrictions have been of benefit to certain U. S. companies. The antibiotics situation illustrates this point. Relatively few countries have antibiotic production facilities. As they have only limited dollar funds for purchase of medicinals in the United States, they purchase items that are most effective and items they do not manufacture themselves.

Labor also creates problems in some countries. For example, hiring salesmen in Latin American countries is not difficult, but once a salesman is hired it is virtually impossible to fire him, regardless of the man's performance.

Another problem is packaging,

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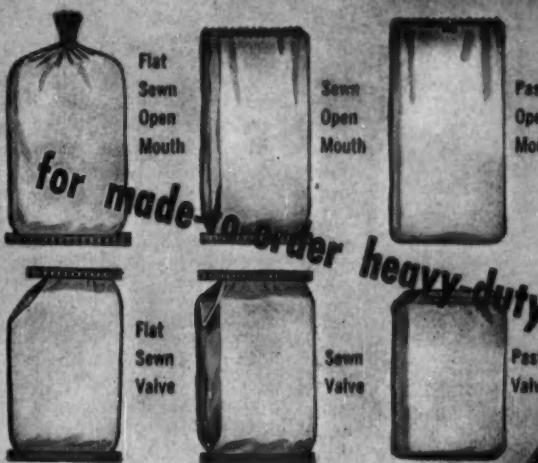
C W Report

which may be dictated by the standard of living in the countries to which products are shipped. For example, in certain countries, such as those of Latin, Central and South America, it is quite a common procedure for the druggist to inject a medication into the patient. This necessitates packaging in smaller units.

Although reports have stated that Germany, Switzerland, England and Japan are sources of competition in the drug field, this is mainly future competition. These activities do not now constitute a serious threat to U. S. drug companies. Most domestic manufacturers feel that they are able to compete in the foreign fields through superiority of production methods and also through specialty products.

**Hard to Pin Down:** To estimate the actual potential in foreign markets is quit difficult. U. S. Tariff Commission figures show a total 1951 volume for pharmaceuticals and biological products of amounting to \$241 million; in 1952 the volume was \$189 million. Drug sundries, principally proprietary, were \$65 million in 1951, and \$60 million in 1952. Vitamins, chiefly proprietaries, were \$79 million in 1951, and \$55 million in 1952. These figures account only for material actually shipped out of the United States, do not include materials manufactured in such countries as England, from which profits came back to the parent companies. Manufacturing facilities have been expanding tremendously in foreign countries, and, therefore, the total dollars received from export operations by U. S. companies is even larger than might be inferred.

Chief benefit to U. S. companies has been derived from penicillin and streptomycin, as well as from broad-spectrum antibiotics, vitamins, sulfas, and hormones in the ethical fields. Sales in foreign countries have tended to shift from the competitive type of product to a specialty product that has protection not only of tradename but also of patents on the product itself. Future outlook for the export field is good—providing, of course, international situations do not prevent further competition for these markets.



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# SPECIALTIES



WALL COATING: Painting acrylics into the competitive picture.

## Acrylics in a Finish Fight

With a major mail order house readying a line of acrylic paints for introduction late this month, acrylics make their strongest bid for a share of the billion-dollar paint market.

Paint buyers this spring will have a wide choice between paints of the odorless oil types, the butadiene-styrene latex, polyvinyl acetate, and acrylics.

Particular baby of Rohm & Haas, the acrylic emulsions will also be in production within a week by American Polymer.

Warming up for the spring cleanup season, Montgomery Ward will later next month introduce a new line of acrylic-based paints. Though it isn't the first firm to come out with such a paint, Ward certainly can give a hard push toward making acrylic paints a major competitor in interior finishes.

This sales drive is being felt by more than just Rohm & Haas, which got the newcomer on its way last spring with the introduction of Rhoplex AC 33 emulsion. Anticipating a mounting demand, American Polymer\* Corp. (Peabody, Mass.) slipped

into production this week with an acrylic emulsion also designed for paints.

Just where Du Pont, another leading maker of acrylics, stands is still moot, but it's no secret that Du Pont is "investigating the acrylics as film formers."

**Room for Four?** The new paints are illustrative of the rapidly broadening intra-paint competition—the paint buyer now is no longer limited to just oil and casein paints. Already butadiene-styrene paints are a \$40-million annual business; PVAc paints are after even bigger sales (CW, Nov. 14); and oil paint makers are pushing odorless products.

\* This puts American Polymer in the position of making all the commonly used paint latices now—butadiene styrene, polyvinyl acetate, vinylidene chloride, and acrylic.

Acrylics are far from limited to home decorating. One of the first firms to offer acrylic paints based on Rhoplex AC 33 manufactures industrial paints exclusively. That firm, Socony Paint Products Co. (Metuchen, N.J.), has been in production of Socoplex industrial coatings for several months, indicates they're getting good acceptance.

Despite this consumer appeal, however, and the recognized qualities of the acrylates as film formers, high cost has been somewhat of a deterrent to their use. But since the opening of Rohm & Haas' Houston plant last spring (CW, Feb. 28, '53) the price reductions have broadened usage.

**Two-a-Day:** The factors that have made all water-based paints attractive have been their fast drying and relatively odorless qualities. And included in this category are the acrylics. Their brief drying time permits painters to slap on two coats easily in a workday—there's no need to let the undercoat dry for a day or two.

The other pluses of the acrylics are pretty impressive, too. No colloid is needed to maintain the suspension. The acrylics aren't ion-sensitive—can be tinted with calcium pigments, can be formulated with hard waters (buyer does not add water before using), and require no special manufacturing equipment. The emulsion can take a high pigment load, so that paints with good covering power can be made.

Finished formulations appear to have good storage stability, and resistance to freezing and thawing. Easily applied, the acrylic paints can be put on over "hot" plaster, even wet walls, and will cover concrete blocks, cinder blocks, and the like.

Paint manufacture is quite simple, R&H (which does not sell finished paints itself) says: essentially, add water, pigments, dispersion agents, and antifoamers to its dispersion. This simplicity helps paint makers price acrylics "competitively." Besides Socony and Ward, Inertol Co., Inc. (Newark) advertise acrylic paints; R&H supplies others.

These manufacturers will be participating in one of the biggest skirmishes in paint-making history this spring. Four major types of paint will be competitively sold for the first time—and in spite of their generally good qualities, chances are all won't be big successes saleswise.

It will be a significant spring for paint raw materials makers, too, and ought to be interesting to the public as well.

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proprietary solvents, Neosol® and Neosol A.

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\*Tank truck and drum availability west of Rocky Mountains is limited.

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## SPECIALTIES . . .

**Time Slasher:** The X-Ray Dept. of General Electric Co. has developed a liquid chemical, which, it says, slashes x-ray film processing time by 50%. It's named Fixer-Neutralizer, is used following the fixing process.

**Progress Booklet:** Du Pont has just published a 32-page booklet titled "The Story of Agricultural Chemicals." Listed are the developments of industrial and governmental research that have upped pork production 30% per pig in the last 10 years, egg production 71% per hen since 1910, milk production 88% per cow since 1910.

**Gleam Keeper:** Haldane-Blake Inc., of Cleveland, O., now makes a chemical coating for auto chrome that protects against rust and pitting. It's called Chromatloc, costs \$1.50/pt.

**Sun Proof:** Hart Manufacturing and Sales Co., Inc. (Portland, Ore.) is claiming a unique feature for its Auto Gloss polish—says it can be applied on hot surfaces or in direct sunlight.

**New Matte Finish:** Bettinger Corp. (Waltham, Mass.) offers a full matte, acid-resisting finish that the company says answers an important need in architectural curtain wall construction. The company states that the porcelain enamel coating meets Class A, the highest on the Porcelain Enamel Institute scale of acid resistance.

**Ag Chems in Greenfield:** The Greenfield, Ind., plant of Eli Lilly & Co. will begin making agricultural antibiotics this month. They will be sold in bulk to feed manufacturers for mixing. First to be produced will be those planned as aids to digestion. Later the plant will make antibiotics for treatment of poultry and livestock diseases.

**Packaging Firm:** A new aerosol packager, Western Filling Corp., has been formed in Los Angeles, Calif. Offered are refrigerated and pressurized packaging, as well as laboratory facilities.

**Quick Finish:** Rex Industrial Paint Works (Ossining, N.Y.) now makes a quick finish called Shell-O-Gloss 20-Minute Clear Sealer. The company states that the product should replace sealing varnishes since it eliminates the need for 24-hour drying between sealing coat and top finishing. Price is \$2.95/gal. in 5-gal. cans, \$2.60/gal. in 55-gal. drums.

**New Products:** The latest items from four companies:

# NOW PURE CANARY-YELLOW DISTILLED Phosphorus Pentasulfide

Here it is! The newest product from Victor . . . phosphorus pentasulfide. Here is  $P_2S_5$  as you've always wanted it . . . canary-yellow in color, distilled for uniform composition and purity, speck-free. And, it's available in this uniform high quality in quantity . . . from drums to carloads. Best of all, you pay no premium for this purer product. Write today for samples and additional technical information.

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**PHOSPHORUS PENTASULFIDE (P<sub>2</sub>S<sub>5</sub>)**  
(Sometimes written as P<sub>2</sub>S<sub>5</sub>)

**GRADE . . . . .** Distilled—insures uniform composition and high purity

**PHYSICAL PROPERTIES . . . . .** Yellow to yellow-green solid of high purity  
Freezing Point 275° C. min.

Density—Powder—approximately 1.3

Solid — approximately 2.0

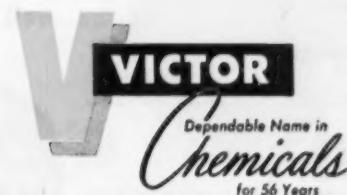
Soluble in alkalies, carbon disulphide; decomposed by water

**TYPES**

**AVAILABLE . . . . .** Supplied in powdered or granular form.

**ANALYSIS . . . . .** Phosphorus—27.8% minimum

**USES . . . . .** Intermediate in the manufacture of thiophosphates for oil additives, flotation agents, insecticides, and other chemicals.



# BIG 4 in "chemi-fats"

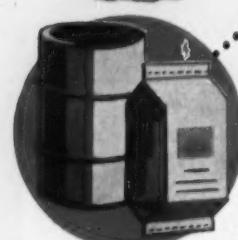
1. Adol fatty alcohols
2. Hydrofol glycerides
3. Hydrofol fatty acids
4. ADM sperm oil products

available for immediate shipment:



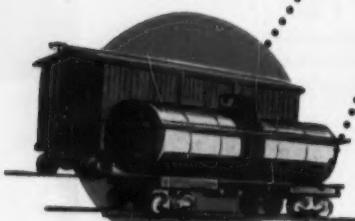
## in working samples

Any standard or special "Chemi-fat" can be furnished for research and experimental purposes.



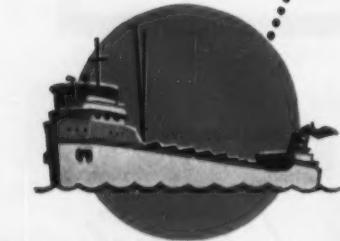
## in bags or drums

Flaked and beaded fats are supplied in 50-lb. multi-wall paper bags. Liquid chemicals in 400-lb. steel drums.



## in carloads

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## in shiploads

Marine shipments to foreign and domestic ports can be arranged for high-volume users.



## write for free wall chart of ADM chemicals.



Easy-to-read tables give composition and specifications of 40 ADM "chemi-fats". (Chart is 17" x 27")

Other ADM Products:  
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## SPECIALTIES . . . .

• Brockton Chemical Co. (Brockton, Mass.)—Mr. Formula 7 Soot and Carbon Remover, an organic halide compound. The company says its use improves flames, saves fuel, and prevents soot from forming. Price: \$2/pt.

• Mona Industries, Inc. (Paterson, N.J.)—Monawet Mo, a wetting agent and penetrant of the dioctyl sodium sulfosuccinate type. Its maker says it's stable in neutral, cold or hot water solutions. It's available in various forms—a paste, two liquids and two gels.

• Permatex Co., Inc. (Brooklyn, N.Y.)—eight new chemical sealants that have both cold and heat resistant qualities.

• Du Pont's petroleum chemicals div.—a tetraethyl lead-compound aviation mix, with a lower blue dye concentration, designed to meet U.S. Air Force standards. The new mix, according to Du Pont, will permit refiners to dye military aviation gasolines more easily within the ranges of latest color standards.

**Enzyme Dealer:** The Conoco Chemical Co. (Dallas, Tex.) has been made a dealer for Saxon Enterprises (Los Angeles). It will distribute two of the California firm's enzyme products.

**Insecticide Need:** So far there is no insecticide that will adequately control the pink bollworm. This was stressed at a recent conference on cotton insect control in Memphis, Tenn. Many preparations, it was stated, will retard the pest's activity but cotton growers must still depend chiefly on cultural control practices. The National Cotton Conference-sponsored gathering was told that the problem's solution lies in the development of "systemic" insecticides. Systemic control involves a cotton plant's ability to absorb a chemical insecticide and to distribute it throughout its system, thus poisoning the food supply of insects.

**The Glidden Co.** is now operating a new paint and varnish plant in Atlanta, Ga. Purchased early last year, the plant has since been modernized and its capacity doubled. It's Glidden's second paint plant in the South. The first, at New Orleans, was established over 50 years ago.

**Expansion:** Two Philadelphia concerns are expanding:

• Smith, Kline & French Laboratories has started additions to its manufacturing and research building that will cost \$175,000.

• Kiwi Polish Co. has signed a



**BLEACH MAKERS:  
HALANE MAKES  
POSSIBLE NEW  
POWDER-TYPE  
HOME LAUNDRY  
BLEACH WITH  
WIDE SALES  
APPEAL**

This news bulletin about Wyandotte Chemicals services, products, and their applications, is published to help keep you posted. Perhaps you will want to route these and subsequent facts to interested members of your organization. Additional information and trial quantities of Wyandotte products are available upon request . . . may we serve you?

Halane, Wyandotte's new, dry chlorine bleach, is creating an unusual amount of interest. Extensive tests, both in the laboratory and in the field, have shown Halane combines bleaching effectiveness and excellent stability in a highly desirable physical form. It makes possible safe, effective, powder-type home laundry bleaches . . . no pinholing - safe and effective bleaching is assured.

Bleaching effectiveness of Halane is of the same order as the hypochlorites . . . stain removal properties are similar, too. Halane has the important advantage of releasing its hypochlorous acid at a rate dependent on bleaching conditions, permitting control of the bleaching process, and more effective use of the available chlorine.

Another outstanding advantage of Halane is its safety. Powdered Halane, for example, may be placed directly on wet fabric without pinholing or serious loss in tensile strength. Halane-based bleaches can be used on cotton, nylon, acetate and rayon.

Unusual storage stability is exhibited by Halane, both alone and with builders. This stability suggests volume sales possibilities in convenient, cost-saving cardboard containers for Halane-based household bleaches. Effective sanitizing and disinfecting properties are also provided.

Data, samples, and an informative brochure - "Household Bleaches Today and Tomorrow" - are available . . . please make requests on your company letterhead.

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Wyandotte Research is working with the problem of the paper industry of overcoming pigment flocculation or thickening in starch coating colors . . . a recent development shows encouraging results. If you are seeking new ways and means to minimize flocculation in your mill, write us, defining the nature of your problem; we'll be happy to work with you.

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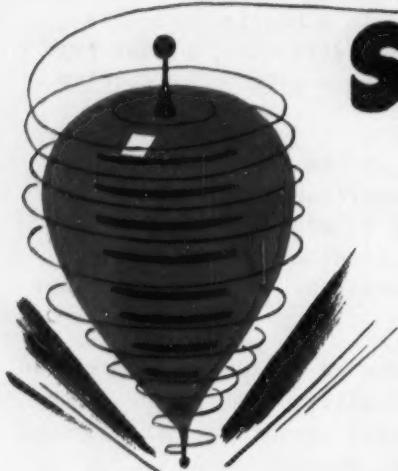
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## SPECIALTIES . . . . .

\$60,000 general contract for addition of two stories to its manufacturing building in Pottstown, Pa.

**Over the Counter:** Chas. Pfizer & Co. has begun selling a line of Terramycin animal health products over the counter in drug stores. Called Terramycin Animal Formula, the product is offered in two forms, tablets and soluble powder. It's recommended for treatment of common infections in both pets and livestock.

**Colored Milk Bottles:** Milk bottles in hues of ruby red, dark brown or green may soon be used as a result of scientific discoveries on the effect of strong light on homogenized milk. Colored bottles are already being used experimentally in some sections of the country, according to Francis J. Doan, Pennsylvania State College professor of dairy manufacturing.

**Almost Automatic:** Carstens Packing Co., Tacoma, Wash., will begin operating a new fertilizer plant this month. The \$175,000 plant will produce 20,000 tons annually, will be virtually automatic in operation, requiring a crew of only six men.

**Dual Purchase:** Myers Laboratories, Warren, Pa., has purchased two Detroit drug firms—the Dionol Pharmaceutical Co., producer of medicated ointments, and the O. V. Corp., maker of vitamins. Both companies will be moved to Warren.

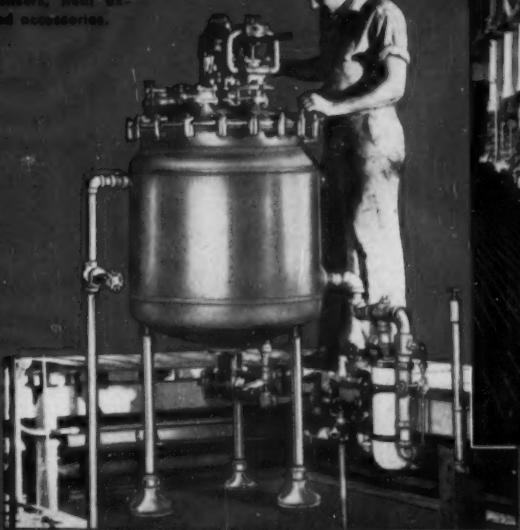
**Canadian Move:** The Lander Co. (Canada) Ltd., subsidiary of Lander Co., Inc., New York, is building a 40,000-sq.-ft. single-floor office and factory in Toronto, Ont., where it will manufacture toilet preparations.

**Sold:** Boyle Midway, Inc., has bought Easy-Off Oven Cleaner from its maker, The Wolcott Co., Hartford, Conn. The transfer was effective Jan. 1.

**More Room:** Chipman Chemical Co. (Bound Brook, N.J.) has purchased a tract of land near Bessemer, Ala., and is planning a plant valued at several hundred thousand dollars to produce insecticides, fungicides, weed killers, and related agricultural chemicals for farm and industrial use.

• Another farm chemical company is just getting started—Southeastern Chemical Corp. has been formed in Douglas, Ga., will manufacture and distribute crop dusts, livestock sprays, and the like.

For transfer of laboratory scale production to the pilot plant stage, Pfaudler offers a full range of glassed reactors, mills, condensers, heat exchangers and accessories.



When you are ready for commercial production, larger Pfaudler standard (and custom-built) glassed steel vessels enable you to carry on with predetermined yields and costs.

*For quick, safe change-over  
to pilot plant and commercial production, get  
the corrosion resistance of glass  
plus the working strength of steel*

As you develop a process from laboratory experiments through the pilot plant stage and into commercial production, your corrosion problems multiply.

But you can usually eliminate these problems—with Pfaudler glassed steel equipment for pilot plant or big-scale production. The inside glassed surface provides the same inert resistance to corrosion as your laboratory glassware—resistance to all acids (except hydrofluoric) and alkaline solutions up to pH 12 and 212° F.

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**More flexible**—The almost universal corrosion resistance of glassed steel often means that *one* Pfaudler reactor can be used for work that formerly required several vessels of assorted materials. This cuts down original equipment investment and saves time required for changing processes.

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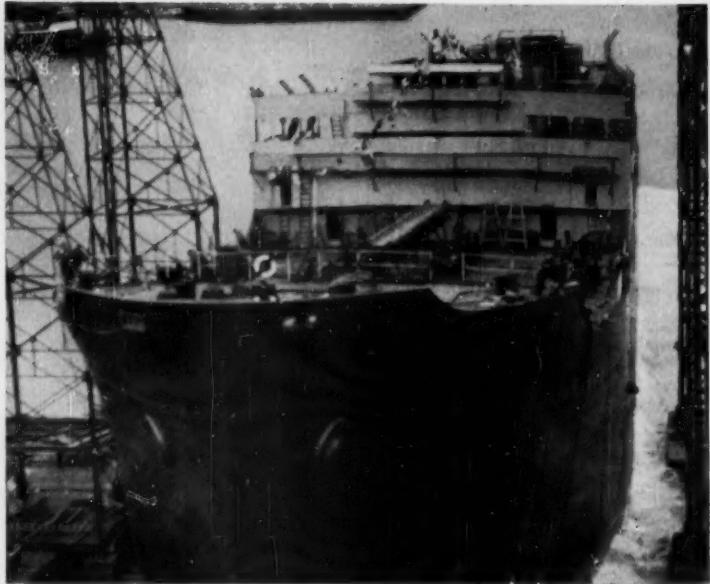
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**THE BEST IN ELECTRIC HEAT**



THE S.S. MARINE DOW-CHEM: Her sponsors may be . . .

## Launching a New Era

WHEN THE S.S. Marine Dow-Chem starts plying the Atlantic and Gulf of Mexico sometime early this year, the event may well presage a new era in water-borne transportation of chemicals.

Launched recently at Bethlehem Steel Co.'s Quincy (Mass.) yard, the vessel is the first ocean-going tanker specifically designed and constructed to carry high-density liquid chemicals in bulk. The ship is being constructed by Bethlehem Steel for Marine Transport Lines, Inc., which will operate it for transporting Dow Chemical's products exclusively.

The new vessel will carry 11 different chemicals in 24 center tanks with a total capacity of over 3½ million gal. According to Dow, the list of chemicals that will make the trip from its Freeport, Tex., plant to East Coast ports includes perchlorethylene, methylene chloride, carbon tetrachloride, chloroform, hydrochloric acid, 73% caustic soda, styrene monomer and glycols.

To make certain that the individual components of the cargo will have the same degree of purity when delivered as when originally loaded, the tanker has se-

gated tank, piping and venting arrangements, and other special equipment.

Four of the tanks, having a capacity of 632,000 gal., have been expressly designed to carry the 73% caustic soda. To avoid corrosion and contamination problems, the caustic tanks are either pure nickel or nickel-clad steel. Heating coils, for maintaining the caustic in liquid state at about 230 F, as well as pumps, valves and piping used in loading and unloading the caustic, are also made of pure nickel or are nickel-lined.

Although comparative costs figures are not available, the economies of transporting chemicals in bulk versus drum shipments are patent. Neither Marine Transport nor Dow will supply estimates, but the fact that the elaborate equipment must be assumed to justify the savings speaks for itself.

This much did William Westerlund, Marine Transport president, claim for near future of bulk marine transportation: economies that should develop from such movement should lead to expansion of demand for these products, particularly from the plastics industries.

# Starting point for quality products

Quality products begin with quality ingredients. That's why Nialk

Chemicals are used today in so many exacting applications.

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NIALK TRICHLORethylene: For fast, low-cost de-greasing of metal parts, NIALK TRICHLORethylene is enjoying a rapidly growing acceptance. This superior degreasing agent cleans and dries in record time...is nonflammable...can be heated by either gas, steam or electricity...and is completely re-usable after distillation.

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Add longer life and  
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**Tri-Clover Butt Welding Fittings in Stainless Steel**  
Type 304, 347, 316 and other analyses, are custom  
fabricated from highest quality materials by skilled  
craftsmen backed by years of specialized experience.  
Because of this quality, plus full corrosion resistance  
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Available in all standard fitting types.

**Tri-Clover Schedule 5 and 10 welding fittings** are made  
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in sizes from  $\frac{1}{2}$ " through 24" and 36".

**Schedule 40 welding fittings** are available in sizes  
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### DISTRIBUTION . . .

**For The Bookshelf:** Among the current offerings are these:

- Aries Laboratories, Inc. (New York) has made available a 14-page brochure on the use of Aritemp casting resins for the encapsulation and embedment of electronic components and circuit assemblies.

- Rohm & Haas Co. (Philadelphia) offers a 16-page bulletin, "Amberlite Ion Exchange," describing synthetic resin ion exchange application for solving various industry problems.

- Atlas Powder Co., Industrial Chemicals Div. (Wilmington) has released a 26-page bulletin on why and how Pycal plasticizers can be used in polyvinyl acetate emulsion adhesives. This bulletin discusses six types of Pycals and includes eight tables of comparative test data.

- Philadelphia Quartz Co. (Philadelphia) offers an instruction sheet for conducting jar tests using activated silica sol as the coagulant. Jar test evaluations are recommended preliminary steps to a full-scale plant run of activated silica sol for the treatment of raw and waste waters.

- Celanese Corp. of America, Plastics Div. (Newark, N.J.) has published a four-page folder, "Celanese Acetate Sheet and Film," on markets and properties of acetate sheeting and film; and a 16-page illustrated semi-technical booklet, "Celanese Molding Plastics," on six different molding materials, compounded to meet a range of ASTM flow characteristics, for injection and extrusion molders.

**Sodium Dispersions:** A new bulletin issued by National Distillers Chemical Co., contains detailed directions for formulation, preparation and industrial application of sodium in dispersion form. Sales and development activities are handled by National Distillers' U.S. Industrial Chemicals Co. division.

**Foam Film:** An 18-minute black and white film is now available from Dow Chemical on the use of its low temperature insulation, Styrofoam. The sound film is distributed through the Merchandising Section, Plastics Sales Dept.

**Product Sales Group:** Monsanto Chemical's Plastics Div. has established a new product sales group for polyethylene resins. Headed by Edmund Childs, the new group is forming to handle production from Monsanto's Texas City, Tex. plant, scheduled to go onstream in the fourth quarter of this year.

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**SUPPLY DEPOTS**

**TO ASSURE YOU EVEN BETTER NATION-WIDE DELIVERY SERVICE**



These two new Columbia-Southern liquid caustic soda storage depots in Chicago, Illinois, and Carteret, New Jersey, are examples of Columbia-Southern's progressive attitude on customer service.

The addition of these new storage facilities will assure continuing prompt deliveries to Columbia-Southern customers in the two market areas.

Consumers of liquid caustic soda can be serviced by tank cars from the two new areas as well as from these strategic

plant sites: Barberton, Ohio; Corpus Christi, Texas; Lake Charles, Louisiana; and Natrium, West Virginia.

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Specify Columbia-Southern caustic soda for a good product, fast dependable delivery, free technical assistance, courteous treatment, special care in the handling of your orders. Contact your nearest district office today.

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## DISTRIBUTION . . . . .

### Sales Research Check List

#### Marketing Research on Sales Methods

Please indicate by a checkmark those functions that are performed by the executives in charge of marketing research in your organization, or by your marketing research department.

- 1. Studies of prices and their influence on sales volume.
- 2. Studies of price policies, discount structure, etc., in relation to competition.
- 3. Evaluation of existing sales methods.
- 4. Appraisal of proposed changes in sales methods.
- 5. Studies of distribution costs.
- 6. Measuring territorial variations in sales yield, market share, sales effectiveness.
- 7. Measuring effectiveness of individual salesmen.
- 8. Analysis of salesmen's activities.
- 9. Studies of effectiveness of promotional devices like "deals," premiums, etc.
- 10. Studies of distribution of products.
- 11. Establishment or revision of sales territories.
- 12. Sales compensation.
- 13. Advertising and selling practices of competitors.
- 14. Selection of advertising media.
- 15. Measuring advertising effectiveness.
- 16. Others.

SAMPLE

CHEMICAL MARKETERS checked this list and . . .

### Count on Sales Research

Assuming, surely with some justification, that 1954 will be a period of stepped-up sales effort, CW has just polled chemical sales and marketing managers:

• What is your company doing to sharpen its sales methods tools for

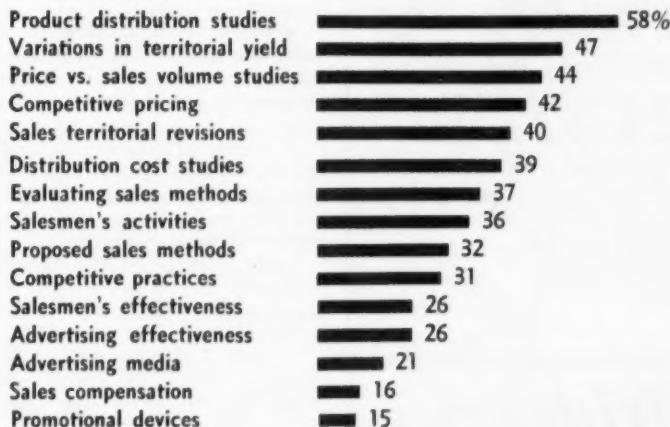
the job ahead? And, more specifically:

- Which functions of marketing research are currently being performed by or for your organization?

Covering practically the entire sales-volume range of the chemical industry, the respondents to this latest

#### Researchers' Rated Check List

(Percentage: 100 x frequency of function/all who research)



. . . here is how the results tallied up.

## What's the score in '54 for new fatty alcohols?

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**DISTRIBUTION. . . .**

CW survey report a wide variety of marketing interests.

This variation in interest is somewhat unexpected since for practical purposes almost all the companies surveyed classified themselves in similar fashion, viz., as suppliers of industrial chemicals "direct to industry."

**Most Often:** However, cast in the form of a multiple-choice questionnaire (see p. 55) the responses fell into some definite patterns. Some of them:

- Most marketers are concerned over the channels of distribution of their products. And in at least one notable instance, a company reports that its studies of this function "resulted in complete revision of sales and production organization."

- As a generalization, the larger the company, the more likely it is to be actively checking its sales methods. Some surprises showed up, however; several companies in the \$25- to \$100-million sales classes report that they're not doing any organized marketing research.

- Compared with U.S. manufacturers of all types, the industrial chemical makers indicated that a lower percentage of their number did sales research. The figures: for all U.S. companies (as reported in American Management Assn. survey\*) 80.4% researched sales methods or policies. Corresponding figure for chemical concerns: only 72% did research.

**Big Four:** Supplementing their checkoff of the list of functions, the respondents were asked to indicate (with comments) those fields (maximum of four) of sales research in which they were most active.

Considered in this manner, the totals showed no one function is currently of outstanding interest. The four activities named as being of the greatest importance:

- Studies of distribution of products was accorded top position in importance, just as it occupied the number-one spot in frequency of mention.

- Studies of prices and their influence on sales volume was likewise considered of high importance. Typical comments of sales executives on this point were emphatic:

"Relation of price vs. sales volume is an important basis for price policy and expansion planning."

"Establishes profit potential."

"Pricing is an integral part of company's activities since the 'wrong' price might send all your sales to

\* AMA Research Report No. 22. For direct comparison, CW's survey (with AMA's permission) followed the same breakdown in marketing functions.

## DISTRIBUTION . . . .

competitors, while the 'right' price will result in increased sales volume."

• Third in importance to sales research was the study of distribution costs. A typical comment: "Freight rates and local competition are becoming major factors in sales."

• Also frequently mentioned as of top interest: appraisal of proposed changes in sales methods. As a sidelight on this point, repliers indicated that, far from viewing their current methods with complacency, they were actively exploring possible switches in organizational setup and/or policy.

**Look Ahead:** Although no cut-and-dried conclusions could be sifted from the welter of opinions advanced by the sales executives who responded to the CW poll, these three generalizations appeared evident:

- There's an urgent need for (1) more information and (2) validation of present research techniques.

- Current research emphasis is definitely shifting toward investigation of various phases of distribution.

- If sales managers and marketing executives continue their present line of thought, there'll be a lot more sales researching under way before long.

**National Packaging Exposition:** The American Management Assn.'s 23rd National Packaging Exposition and Conference is scheduled for April 5-8 in Convention Hall at Atlantic City, N.J. Almost 400 exhibitors are expected to participate, and the trade show is to be the highlight of National Packaging Week.

## Silicone Book

An over-all picture of silicones—designed to serve as a manual for those who buy and use them—will be available early this year. Written by Rob Roy McGregor (Mellon Institute), *Silicones and Their Uses* lists commercial products, describes their properties.

Discussed: silicone fluids, compounds, lubricants, resins, rubbers. Publisher: McGraw-Hill.

## Down To The Sea

The Gulf Coast city of Corpus Christi will this year be the new home of Celanese Corp.'s division office. District supervisors will make the move from the plant site at Bishop, Tex.; A. R. Cochran, present plant manager, will head up the new offices.

Celanese has had storage and shipping facilities in Corpus Christi for many years, and this location was selected to separate district personnel from the plant operation at Bishop.



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# PRODUCTION



VEITH'S VEITH: "E" before "i," and also after.



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FOR THE BENEFIT OF UNSKILLED operators, all formulas are reduced to number of bags, rather than to number of pounds. After operator dumps bag into mixer (left), solvent is metered in directly from storage (right).



LOOSE DIRT FLOOR, kept in order by a tractor and roller, cuts maintenance, reduces hazards from spillage. More important, it provides . . .

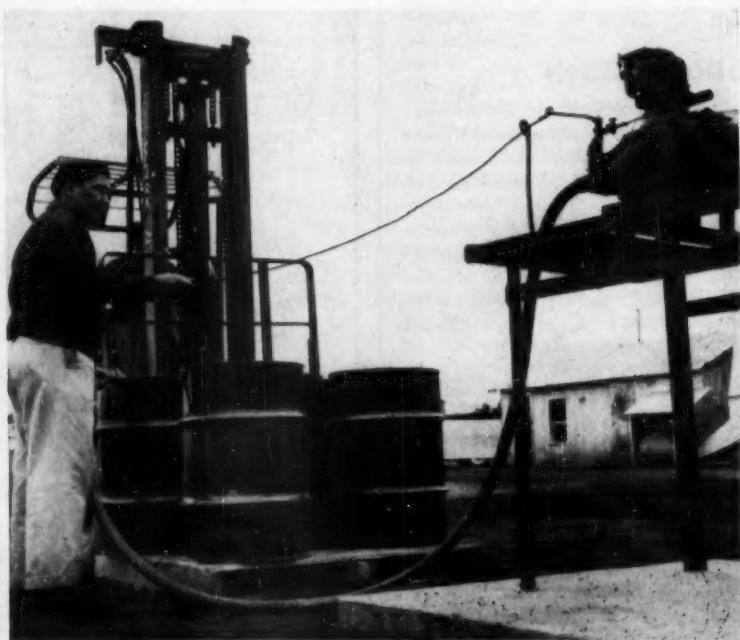
## Fork Trucks on a Turnpike

If you gave George Veith the ingredients for a new protective coating for igloos, placed him in the Arctic and told him to formulate it, he'd probably set up shop in an outdoor plant. He'd buy some rugged kettles and a big, slippery-runned sled powered by a team of the fastest, toughest huskies he could find to haul the stuff between kettles. When he was all finished, he'd be convinced that he had designed a plant that would give him optimum production—the maximum output consistent with a minimum investment. And Eskimos

in the area could witness a rattling good materials handling system.

Veith, of course, has never faced such a problem. But he's done a comparable job in his Fresno (Calif.) plant for compounding insecticides and weed killers.

**A Running Romance:** Veith organized Veith Chemical in 1942 to serve California's San Joaquin Valley. He's now the biggest insecticide, herbicide and defoliant manufacturer, formulator and distributor in the valley, has managed to turn up a tidy profit year in and year out. He's done well





**PRODUCT IS PUMPED** through surge tank, then automatic filler. Drum is filled, fork truck arrives to move pallet.

even in years (e.g., 1952-53) that many in his business would just as soon forget. In the year just finished, for instance, he grossed over a million dollars.

That, he thinks, is just about the right volume. Says he: "Through an all-out effort we could expand our sales considerably. But we'd only be inviting trouble. If we were to expand as rapidly as possible our profits would actually drop for a while. We'd have to carry higher inventories and hire specialized supervisory personnel for office management, purchasing and sales—all of which I can now keep tabs on myself."

It's this same penchant for doing things at optimum efficiency that led to the development of his materials handling system. In 1947, he fell in love with the fork lift truck, has conducted a running romance with it ever since. He started out by designing a dry mixing plant completely around it. More recently, he has extended the same principles to his liquid formulating units.

Fundamentally, his idea is simple: almost everyone appreciates the flexibility of fork trucks. But Veith feels that what many overlook is that they're also "pretty fast." To utilize their speed, he has laid everything out, as far as possible, on a straight line. As he puts it: "We have five acres. That gives us plenty of elbow room. Nothing is stacked behind or under something else. Nothing is ever moved twice—or even once unnecessarily. And with a minimum of turns needed to go from one part of the plant to another, the trucks can travel at top speed."

The turnpike for Veith's trucks is a slightly oiled, loose-dirt floor. Oiling is done approximately once a year at

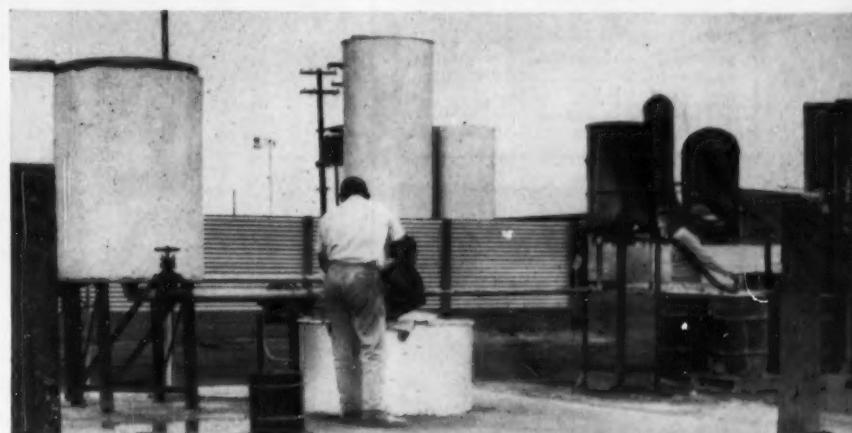


**TO GIVE FORK TRUCKS** plenty of room to run, Veith spent \$15,000 to have all wiring placed underground.

a cost of \$200. A small tractor (costing \$1,000) keeps the floor level, is far cheaper, Veith feels, than a sweep-ing machine and a sweeper.

His theory on the operation of fork trucks is also simple. He buys three

new ones at the start of every season, rides them hard, sells them off for whatever he can get at the end of the season. His total net cost (including operation, maintenance and purchase—less resale—price) comes to about



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PRODUCTION . . . . .



VEITH OBSERVES FORK LIFT bringing raw material to ribbon mixer on upper floor. It takes away palletized product from bagging station on lower floor.

\$200/month per truck.

By choosing to plan his plant around the truck—to cope with his specific, and perhaps unique problems—Veith skirted the need for conveyors and hand trucks. But, as he points out, even with conveyors, he'd need one or two fork trucks. Says he: "Actually very little of the \$15,000 we invested in the original three fork trucks can be ascribed as a replacement for other equipment. Only the lifting operations performed by the trucks is work that conveyors could eliminate, and with the setup we have, we do our lifting on the run." Assuming then that in any case he'd need at least one fork truck and possibly two, Veith figures that, with his tailor-made arrangement, he saves about \$55,000/year. In some years, that could make the difference between a profit and a loss.

He also claims that his system provides flexibility. He points out that if

one of the trucks breaks down, although the process will be slowed, the other two can "cover up."

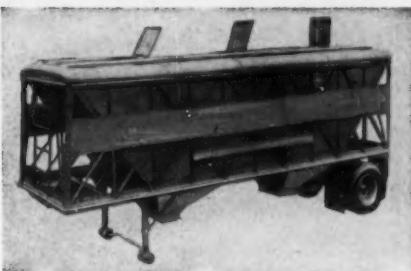
**Over and Under:** By his own admission, Veith likes things simple. "The easiest thing in the world to do is to make something complex," he says. "I like nice, tidy, simple things." One of the exceptions that all but disproves the rule about placing "i" before "e", Veith's name is so often misspelled "Vieth" that he insists on having it listed both ways in the phone book.

He carries the same desire for simplicity into the plant. He feels that buildings should be eliminated wherever possible. The only building on his Fresno lot houses the office, the dry mixing and bagging station and some finished product.

And as a general rule, he'd prefer to have two small production lines rather than one big one. "Remember," he cautions, "that in custom formulat-

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## PRODUCTION . . .

ing, duplication is an engineering virtue, not a sin. With larger tanks, larger pipes, larger pumps, I'd have just that many more bottlenecks."

At the same time, he's not afraid to put in a big piece of equipment whenever he feels that it will pay off. For example, he agitates a 200-gal. batch with a  $\frac{3}{4}$ -hp mixer. "A chemical engineer," he says, "would probably design a  $\frac{1}{2}$ -hp mixer for the job. He'd call our equipment 'oversize.' But we want to move materials."

The net result of this type of reasoning is apparent in the plant. He's turned an inherently batch operation into what he describes as an "imitation-continuous" one.

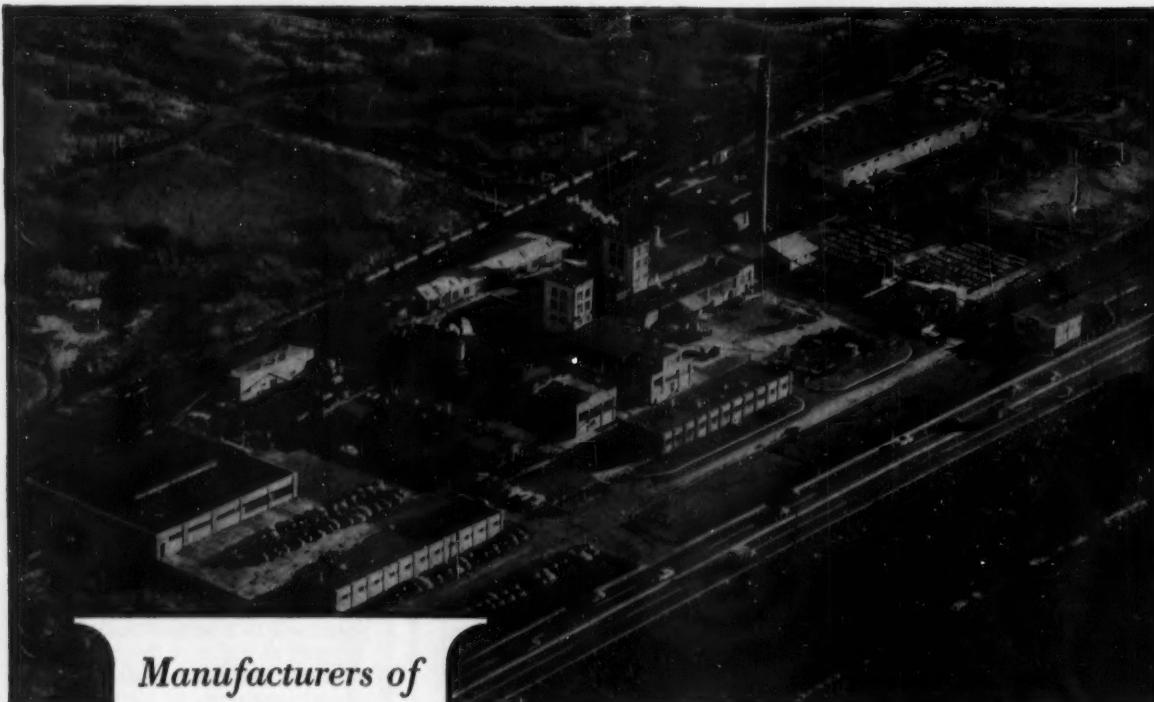
## EQUIPMENT . . .

**New Pressure Cell:** Just out from the Foxboro Co. (Foxboro, Mass.) is a new transducer dubbed the Dynaformer pressure cell. It converts fluid pressure into a proportional ac. voltage with an accuracy that's claimed to be within  $\frac{1}{4}\%$  at any point. Protected against over-range to 150% of its rating, it's available for use in pressure ranges from 0 to 30 in. of mercury and 0 to 1,000 psi.

**Best of Both:** As a protection tube for thermocouples, says The Bristol Co. (Waterbury, Conn.), its new well combines the desirable properties of metals and ceramics. Tagged the Metal-Ceramic LT-1, it's said to have the thermal conductivity and shock resistance of metal and the oxidation and deformation resistance of ceramics.

**For Phenolic Piloting:** Brighton Copper Works (Cincinnati), claims a first with a laboratory or pilot-plant kettle specially designed for development work on phenolic resins. Made of stainless steel, it utilizes an anchor agitator with variable-speed drive. Brighton is ready to build them with capacities up to 3,000 gal.

**Plastic Rope:** Pushing its ropes made of Mylar polyester and polyethylene, U.S. Plastic Rope, Inc. (Redwood City, Calif.) says that at least one major West Coast refiner is testing the ropes to replace conventional fiber ropes for general yard service. Salient feature of the new product is resistance to salt water and corrosive atmospheres. Polyethylene ropes are said to compare favorably costwise with those made of cotton fibers; the Mylar fabrications are more expensive but give higher tensile strength (up to 25,000 psi) than the polyethylene ones (1,800 psi).



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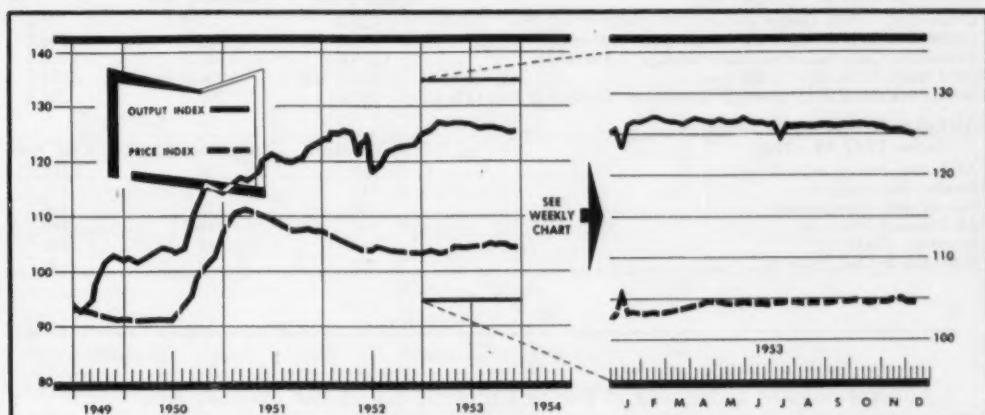
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# MARKETS . . . . .



CW Index of Chemical Output—Basis: Total Man Hours Worked in Selected Chemical Industries  
 CW Price Index—Basis: Weekly Prices of Sixteen Selected Chemicals

## MARKET LETTER

Price-conscious sales managers and purchasing agents continue to eye the future closely, and some are understandably hesitant about predicting trends even for the next couple of months.

For instance, some point out that the direction of prices in the first quarter of this year is enigmatic because of the tie-in with costs of basic raw materials. That's elementary, of course, but it may be an oblique indication—or a hope—that the majority of chemical schedules will remain stable. Reason: after the raft of adjustments last year, it's accepted that not many essential chemicals are at the moment priced out of line with manufacturing costs.

But at least one major price development was noted in the market last week when pyridine producers finally bowed to weak demand. The reduction, which lowers the long-standing \$1.15/lb. price to 95¢, comes as no surprise. (CW Market Letter, Oct. 24, '53).

It's no news that refined pyridine, extremely tight not too many months ago, is now moving at a doldrum-pace. Why: outlets slackening (dyestuffs, insecticides, drugs); stepped-up use of some substituted pyridines like 2-methyl-5-ethyl pyridine (MEP), vinylpyridine, in some former 2-degree material formulations.

Producers, however, still hold to the optimistic view that new uses—once shelved because of the shortage—will soon take up the output.

There's a slight pickup in alkali consumption this week, and the reason is two-pronged: a number of holiday-closed consuming plants are reopening; users are already beginning to replenish deliberately held-down year-end inventories.

Caustic soda production cutbacks, despite some previously expressed fears, haven't been deep enough to impair the supply; most producers stocks are ample to satisfy a not-too-slowly moving demand, but some see the perking export business as a likely market tightener.

There'll be more chlorine and caustic hitting the market now that

## MARKET LETTER

### WEEKLY BUSINESS INDICATORS

	Latest Week	Preceding Week	Year Ago
CHEMICAL WEEK Output Index (1947=100)	120.0	124.5	123.0
CHEMICAL WEEK Wholesale Price Index (1947=100)	105.1	105.1	103.2
Bituminous Coal Production (daily average, 1,000 tons)	1,515.0	1,383.0	1,320.0
Steel Ingot Production (1,000 tons)	1,788.0 (est.)	1,706.0 (act.)	2,213.0
Stock Price Index of 13 Chemical Companies (Standard & Poor's Corp.)	267.6	267.1	263.2

### MONTHLY INDICATORS—Production (Index 1947-49=100)

	Latest Month	Preceding Month	Year Ago
All Manufacturing and Mining	130	132	133
Durable Manufactures	147	151	151
Non-durable Manufactures	116	117	118
All Chemical Products	146	146	140
Industrial Chemicals	154	154	140
Petroleum & Coal Products	130	129	130

operations are under way at Solvay's multimillion-dollar plant at Moundsville (W. Va.).

But later this year Solvay will have an assured outlet for part of its chlorine in the nearby now-building chlorinated methane products plant.

In another arena, naval stores marketers' spirits are high concerning the immediate future outlook. Rosin consumers too, like most other allied chemical users, have been inclined to keep inventories down over the last few weeks of the old year, but that inclination, say dealers, should pep up buying in the weeks ahead.

Export business isn't too bad at the moment, either. Fact is sellers' gum rosin stocks have been whittled and that may indicate an upcoming heavy draw on goods under loan.

Wood rosin prices are up 15¢/cwt. this week and the relatively good export demand is the booster.

Whether or not lower prices will cause a run on polyester resin producers' stocks is moot, but a 3¢/lb. slash by Reichhold Chemicals—effective this week—has the pricing situation in a turmoil.

A few weeks ago some makers reduced schedules to match Reichhold's then-current 38¢/lb. (equivalent standard material), but the latest cut again sets up a multisplit market. One top producer who did not go along with the previous drop will remain adamant. Result: there's a wide range of prices—from 35¢ to about 40½¢/lb.—being quoted.

And not all phenol sellers are yet in agreement on tags, though it's more than likely that the new USP synthetic price—16¢/lb. in tanks—posted late last week by one big producer, will be industry standard.

Some observers envision a pressuring of natural prices because of the new synthetic schedules, though producers are moving fair amounts of the technical grades.

### SELECTED CHEMICAL MARKET PRICE CHANGES—Week Ending January 4, 1954

#### DOWN

	Change	New Price		Change	New Price
Acrylonitrile, c.l., drms., works	\$.045	\$.33	Phenol, synthetic, USP, tanks	.02	.16
Diethyl adipate, tanks, works	.0025	.4475	Pyridine, ref., 2deg., drms., l.c.l., frt. equald.	.20	.95

All prices per pound unless quantity is stated.

## U.S. Dicalcium Phosphate Capacity

(thousand tons/year)

Company	Location	Capacity (by grade)	Fertilizer	Onstream
		Feed		
American Agricultural Chemical	Carteret, N. J.	25	..	1949
International Minerals & Chemical	Bonnie, Fla.	80	25	1953
Monsanto Chemical	Trenton, Mich. St. Louis, Mo.	30 20*	.. ..	1952 1953
Shea Chemical Co.	Adams, Mass.	25	..	1950
Shea Chemical Corp.	Columbia, Tenn.	75	..	1952
Texas City Chemical	Texas City, Tex.	56	14	1953
Victor Chemical	Chicago Heights, Ill. Nashville, Tenn.	22.5* 22.5*	.. ..	1925 1929

Aside from the above rated capacities, gelatin manufacture regularly accounts for approximately 15,000 tons feed grade dicalcium phosphate annually.

\* Plus additional capacity for food-grade dical.

## Time for a Change

Dicalcium phosphate expansion spree winds up with the old year. Now it's a case of waiting for consumption to come along.

Latest unofficial tally heralds a whopping near-110,000-ton output for 1953, a total capacity four times that.

Still to be unwound: spotted tardiness among pace-setting feed formulators in changing over to dicalcium phosphate.

**Now that holidays and expansions** are behind them, dicalcium phosphate producers are putting the tinsel away, facing a new year that will be full of

hard selling and hope that 1953's unfulfilled promise of greater anticipated consumption will be realized. The key to success: persuading feed mixers—

largest dical users—to step up their change to the higher purity,\* higher priced dicalcium phosphate feed supplement. That's where the hard selling will come in.

Last year, however, wasn't exactly dismal: some promises and goals were met, a few were overshot. Still unofficial, latest tally for 1953:

- New capacity to the tune of 195,000 tons/year came onstream (see chart), boosted the over-all figure beyond 400,000 tons/year.

- Actual output, relatively small in comparison with capacity, is expected to have reached 110,000 tons—more than double 1951 production.

- Government's 1954 goal for phosphate feed supplements of 245,000 tons/year was surpassed.

**Into the Gap:** Tempted by high prices (\$92.50/ton on 19% P basis, or \$4.92/unit), shortage, and DPA's 125,000 tons/year expansion goal†, producers rushed in to fill the void. That was 1951; two years later, the repercussions hit the dical market.

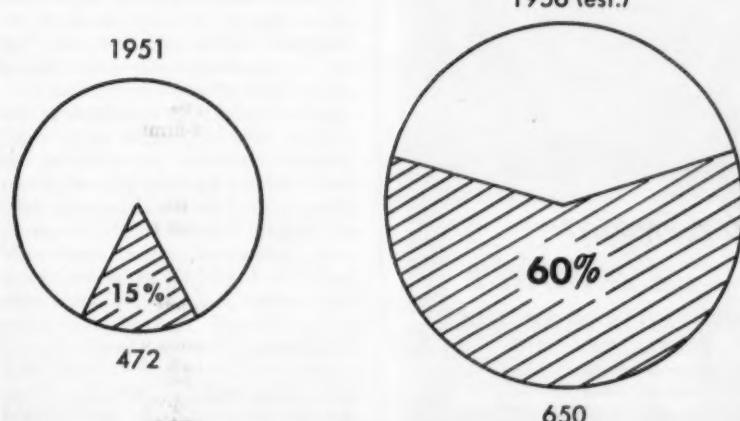
Directly attuned to capacity buildup from the start, dical prices sometimes slipped their nook. The latest drop, only last month, lowered feed grade to \$4/unit f.o.b. works. Coincidental with the start-up of Texas City Chemical, Monsanto (St. Louis) and IMC (Bonnie) operations, this recent slide, declare market men, marks ebb tide. A price-firming is expected; if there's any further lowering most producers will switch to the manufac-

\*Dicalcium phosphate is generally preferred for animal feeds because of its high phosphorous to fluorine ratio.

†Again, this represents total phosphate feed supplements. No individual goal for dicalcium phosphate was established.

## U.S. Phosphatic Feed Demand

(thousand tons, 13% P basis)



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## MARKETS . . . . .

### Phosphate

Bone meal  
Curacao phosphate  
Defluorinated phosphates  
Dicalcium phosphate  
Colloidal phosphate  
Misc.

\* Average price for all defluorinated types.

ture of other phosphates. Moreover, Texas City, Monsanto and IMC are the last of any anticipated additional capacity.

**Formula Change:** The ability to switch, not only to other phosphates, but also from one grade of dical to another provides producers with a welcome degree of flexibility. But feed mixers, in turn have a choice of phosphate sources, and that's of more concern right now to producers. Feed, far and away the largest dical outlet, must underpin any market tightening. Witness:

#### Dical End Use Pattern 1953 (est.)

Feed supplements	85%
Food and drugs	11%
Fertilizer	3%
Misc.	1%

Caught short in 1951, mixers stepped up their use of alternate phosphate sources (see *Phosphate Feed Consumption*). As dical availability increased, many formulators switched back; others, happy with the lower price of the alternate material, have remained unswayed.

Future market-firming, avow producers, hangs not only on luring recalcitrant mixers back into line, but also on more extensive education of animal raisers to the benefits of feed supplements. About two-thirds of the poultry industry—largest single dical consumer today—uses commercial feeds; the rest is generally homegrown. Other animal outlets, however, drop off sharply: the dairy industry shows only a 30% saturation with commercial feeds; beef, 12-14% penetration, and swine about the same. Coupled with an anticipated upward population trend, rise in saturation level is figured to push total phosphate demand along at a 5-7% yearly growth clip. Dical output alone should hit 400,000 tons/year by 1956 (see graph).

## MARKETS . . . . .

### Feed Consumption—1951

\$/unit P	Tons (13% P basis)
6.54	120,000
2.67	97,500
3.52*	96,000
4.92	65,000
2.44	62,500
..	15,000

**Food Value:** Small when compared with feed use, the take of higher-purity food-grade† dical ran about 12,000 tons last year in what appears to be a fairly even split between the two producers, Victor and Monsanto.

Virtually unaffected by the recent expansion spree† and with a greater diversity in outlets (see *Food Grade End Use Pattern*), this market showed greater stability throughout 1953. Its very stability, however, could prove its undoing as far as any future growth goes. Most food-grade uses are already fairly well established, show but small potential for expansion per capita.

### Food Grade End Use Pattern 1953 (est.)

Toothpaste	85%
Drugs (vitamin and enrichment pills)	6%
Food (bread, yeast, cereals)	6%
Misc.	3%

**Fertilizer Spread:** While total phosphate fertilizer consumption runs high (multimillion tons/year on a P<sub>2</sub>O<sub>5</sub> basis), actual dical demand amounted to only about 3,000 tons last year—mostly for tobacco application. Consequently, there's room for growth, provided prices can be dropped low enough to meet competition—especially from the superphosphates.

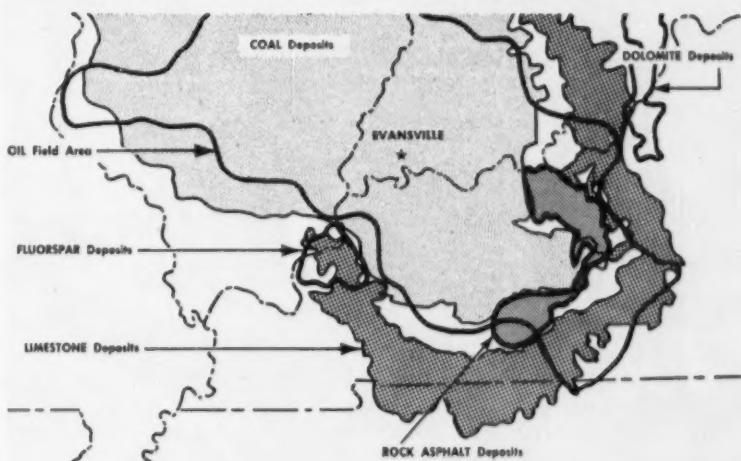
Though permissible to use all food and feed-grade dical for fertilizer application, it certainly would be unrealistic from the standpoint of economics involved, at least for American Agricultural Chemical, Monsanto, Shea and Victor. Texas City, on the other hand, using wet-process phosphoric must write off 20% of its output as fertilizer material anyway because

\* As used here, food grade includes both USP grade for use in pharmaceuticals, and technical grade for use in foods.

† While interchangeable to a degree with feed-grade facilities, food-grade units—the first to be established at Monsanto (St. Louis) and Victor—were not included in recent expansion plans.

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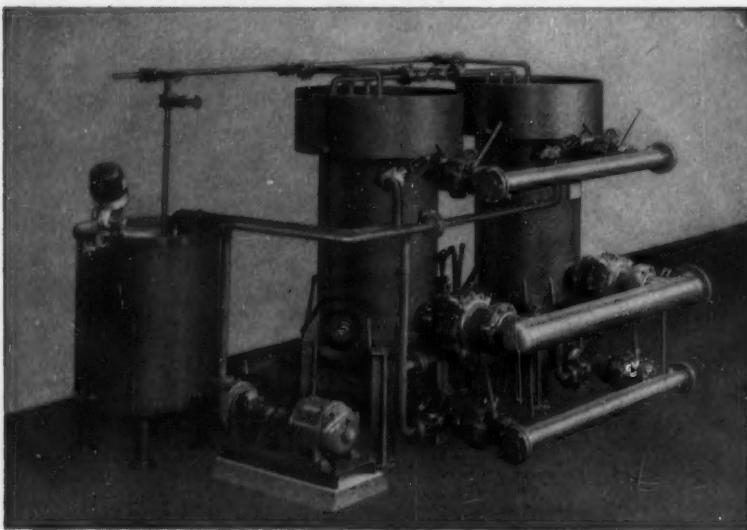
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## MARKETS . . . . .

of high fluorine content (CW, Oct. 4, '52); IMC may have a similar setup at Bonnie. Both producers—at the right prices—will find a waiting fertilizer market.

Admittedly, however, dical's future lies with the feed formulator. Reluctant as some mixers still are, producers admit, it will take hard selling to bring them back into the fold, but it will be done. It's mostly a matter of time, they avow, and it's time for a change.

### One for the Road

Development of a roadbinder outlet for spent sulfite liquor—thus keeping it out of the streams—is soothing the frayed nerves of water pollution committees, and at the same time paving the way to a market with an unusually healthy growth potential. And though this two-pronged program is still in its infancy, it is already showing rather surprising results.

In a fourth quarter accounting, mill manager Forrest Brainerd of Falls Paper & Power Co. (Oconto Falls, Wis.) told the State Committee on Water Pollution that during warm-weather months last year, when oxygen content dropped to a critical level for fish life, the mill kept 20% of its sulfite solids out of the Oconto River, assured committeemen that this year the figure will be 10% higher.

Roadbinder application, meanwhile, was estimated to have taken 4.5 million gal. last year—compared with 1.7 million gal. in 1952, a forecast 6 million gal. in '54. And, declares Brainerd, results will improve as rapidly as other road supervisors are persuaded to test sulfite roadbinder; so far, he says, every road overseer that has tried the binder has come back for more.

It's a top-of-the-page note for pulp salesmen's call books.

### Rubber Drubbing?

Biggest rubber news in '53, of course, was enactment of a concrete plan to insure that the government's GR-S facilities would eventually wind up in private industry's back pocket. That the plan will work is the consensus among most rubber-market followers, although a few dissidents are convinced that Uncle Sam may well find himself stuck with some large rubber-making turkeys.

Complete rundown of the government's views on the subject was revealed at the recent Business & Defense Services Administration-sponsored Industry Advisory Committee meeting in Washington. As might be expected, U.S. officials charged with

## MARKETS . . . . .

the chore of unloading the plants are sure the job can be done—and within the specified 15 months.

Underpinning their optimism is a conviction that world rubber consumption will increase in the future faster than world production of natural rubber. Natural conclusion: synthetic will have to ease into the widening gap.

Further, says BDSA's Everett Holt, the Commerce Dept.'s close-to-the-problem expert, it's a fact that many countries will find it difficult to finance large synthetic imports from the U.S. and Canada. And politics are involved. For many of these could-be consumers are tied in with regions that would frown on any big-time use or production of synthetic rubber. Those countries, therefore, will likely siphon more natural rubber, thus spark a stepped-up call for synthetic from the rest of the world.

Holt, privately admitting that pinpointing rubber consumption figures is well-nigh impossible, does come up with some predictions for the far future: he is certain that there is a world market for the minimum amounts of GR-S and butyl rubber the government insists must be sold after the plant disposals are made. Though the U.S. Rubber industry prefers that the government get out of the business, there has been a vague uneasiness over whether or not markets would be available for privately produced stock. The agency envisions a normal average annual demand for at least 450,000 tons of GR-S and some 70,000 tons—as against the 45,000-ton disposal requisite of butyl. (And though not mentioned in the talk before the committee, BDSA also believes there is an outlet for at least 75,000 tons of neoprene and Buna-N Type combined.)

**It Comes Naturally:** Last week the Natural Rubber Bureau was also jostling some figures around (*CW Market Letter, Jan. 2*). But the bureau is concerning itself with the relatively immediate outlook, as opposed to the government's five- or ten-year view.

Although the production-consumption curves are headed downward for both natural and synthetic rubber, says the bureau, synthetic is due for a steeper skid in 1954.

Total rubber output for the new year, the bureau opines, will drop to 2,450,000 tons (from '53's 2,630,000); use will toboggan some 100,000 tons to 2,320,000 tons. Synthetic rubber is expected to account for 170,000 tons of the production drop, all of the consumption slide.

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**RESEARCH . . .**



FAT STRIPPER: For a raw material, a mountain of tallow.

**Natural for Tallow**

Despite the baleful shadow of a mountain of surplus tallow, processors of fats and oils this week have cause for good cheer. They're witnessing the debut of the first commercially available tallow-based synthetic detergent. It's Antara Chemicals Division's (General Aniline & Film Corp.) new Igepon TE-42.

Beamed at a broad cut of detergent consumers, Igepon has a rare opportunity. It is, of course, a practical outlet for mounting tallow supplies (which some estimates place at a billion pounds in 1955). But more important, it could be remembered as the springboard by which the fat business bounced into direct competition with the petroleum industry.

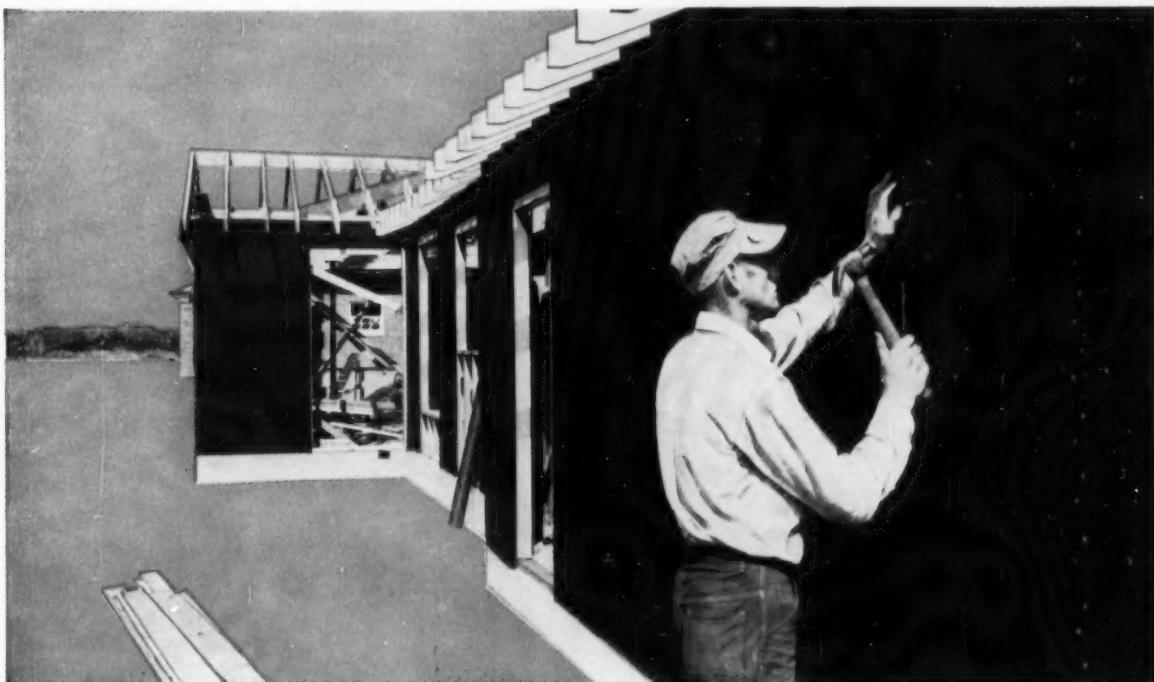
Antara's role in sparking the new development will not tax the imagination of detergent men. A long-time user of fatty acids in making its traditional Igepon line, the company can provide a snug process niche for tallow.

Igepons fall into two broad categories: (1) amides, formed by the reaction of fatty acids and taurines; and (2) esters, produced by condensing acids with sodium isethionate. Tallow acids fit both reactions, supplement currently used oleic, palmitic, tall oil and coconut oil acids. General Aniline is producing both a tallow-based ester, Igepon AE, and an amide, TE. Oleic is the only other acid reactant with a foot in each of the Igepon subdivisions.



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As big as he was, Paul Bunyan's bee hives wouldn't even approach the wax production of the Bareco Oil Company. Although there are important differences between bees-wax and microcrystalline wax, the comparison is well drawn. Paul, with all his "bigness" would have to own over *thirty-seven million productive hives or three trillion bees* to even come close to Bareco's cumulative shipment of its three hundred millionth pound of wax at the close of 1953. The sales figures speak for themselves. In a few short years formulators using microcrystalline wax have discovered that specialization pays off, for "Wax is Bareco's Business . . . Its Only Business." For full details on the complete line of Bareco Microcrystalline Waxes write . . .



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## RESEARCH . . . . .

**Go Ahead Factor:** In plant operations at Linden, N.J., tallow acids (mainly oleic, palmitic and stearic) obtained from fat strippers are converted to acid chlorides, reacted with methyltaurine (2-methylaminoethane sulfonate) and caustic. Reaction product, labeled sodium-N-methyl-N-“tallow” taurate, for convenience, is recovered as a slurry. An improved process for methyltaurine, just now emerging from its shakedown period at Linden, was no small factor in the decision to go ahead with the new Igepon.

Pegged at 9½¢/lb. (carload) for a 26% active slurry, Igepon TE-42 should follow the end use pattern traced by its Igepon T predecessors. Stable to acid, alkali, hard water and metallic ions, the Ts do service in built synthetics, ternary soap systems and detergent specialties. Antara envisions applications for TE-42 in the paint, paper, textile and leather industries.

Richest plum, of course, is the home and commercial laundering and dish-washing market; but Antara isn't overlooking such appealing possibilities as the use of the new surface-active agent in metal cleaner and agricultural formulations.

First tallow-based detergent freely available to the trade, Igepon TE-42 is by no means the first of the family. Procter & Gamble has for some time produced a tallow alcohol sulfate, but purely for captive use. Like Antara, P&G starts with tallow fatty acids. But that's where the process similarity ends; P&G gets the alcohol by reduction, then converts it to the sulfate.

**Tallow Spadework:** Although Antara isn't in direct competition with P&G (which doesn't sell to formulators, etc.) where the new Igepon is concerned, the latter's pioneering influence in the field of tallow utilization will surely be felt. Encouraged by P&G's success with tallow alcohol production, others have shown their willingness to take a chance on the process. Large-scale tallow alcohol capacity, due to begin coming in next month, is mainly the result of P&G's spadework.

But, contends Antara, the newest Igepon should fare well in competition with tallow alcohol derivatives. First off, states the company, most available tallow alcohol is produced by sodium reduction, costs about the same as TE-42; before the alcohol can serve as a detergent, however, it must be sulfated, at additional cost. Secondly, Antara claims that TE-42 can be built to equal the performance of tallow alcohol-derived materials.

In the big picture, the new Igepon's success or failure is closely tied in with

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RESEARCH AND DEVELOPMENT CHEMIST  
 Excellent opportunity with internationally-known company for chemist having satisfactory academic background with experience in building product specialties. Industrial protective coatings and allied lines. Knowledge of formulations, testing procedures and field practices.

P1228 Chemical Week  
 330 W. 42 St., New York 36, N. Y.

## WANTED

NEW PRODUCT CHEMIST  
 OR ENGINEER, EASTERN AREA

Large eastern chemical company has opportunity for technical man, with experience. In development of new Chemical Specialties products for fields not served by existing products.

Originality and demonstrated accomplishment important considerations. Write giving age, experience, education, salary expected and photo, if possible. Replies held strictly confidential.

P1255 Chemical Week  
 330 W. 42 St. New York 36, N. Y.

## Positions Wanted

Coating, Laminating, Extrusion, Impregnation, gravure printing, foil rolling, vacuum metal evaporation and refining. Rubber, plastics, thermosets and latex. Aluminum, papers, films, textiles. Classified defense and commercial. Extreme temperature conditions. At present chemical director, AAA-1 multi-plant company which operates in all these fields. Wish to change; available for two days per week on permanent basis. Development, Production or Marketing. Individual problem, or general supervision or special conditions. P.W. 1218, Chemical Week.

## Position Wanted

Will you sell more in '54? Let a fast thinking Chemical Engineer help you. PW-1274, Chemical Week.

## Selling Opportunities Offered

### Wanted

#### NEW ENGLAND

#### SALES REPRESENTATIVE

Basic plasticizer manufacturer needs service of experienced Sales Representative in plastics field. Chemical or Chemical Engineering background desirable but not essential. Good opportunity with a growing company.

Reply stating qualifications and salary requirements to:

Manager, Plasticizer Division  
 Pittsburgh Coke & Chemical Co.  
 Grant Building, Pittsburgh 19, Penna.

Salesman Wanted metropolitan area New York City. Electro plating background preferred, draw plus commission. Excellent opportunity right man. SW-1177, Chemical Week.

Chemical Sales Representation Wanted: We distribute exclusively in the United States, products of several large West German Chemical Manufacturers. We desire representation in the Southern, Mid Western, South Western and Western sections of the United States. Direct replies to Amer Chemicals Inc., 500 Fifth Avenue, New York, N.Y.

Sales Representation, Young, progressive, well-established and expanding Southeastern company desires representation by reliable sales organizations in East, Midwest and Southwest. Manufacturers of vinyl plastisols and organosols, natural and synthetic latex compounds. Complete plant facilities for conversion of these materials into finished products; fabrication, silk screening and heat sealing of vinyl film and sheeting. RW-1228, Chemical Week.

## PUBLICATIONS

Chemical Abstracts Chemical Engineering wanted to buy for cash back volumes and sets, Ashley, 24 East 21 NYC.

## BUSINESS OPPORTUNITIES

Army Officer returning to civilian life seeks association chemical, related business. Valuable experience, graduate chemist, sales ability, hard worker. Fine reputation. Will invest if necessary. BO-1294, Chemical Week.

## SPECIAL SERVICES

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187-187 West Oxford Street

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OR TELEPHONE: GARfield 6-7890

# chemical process industries

## EQUIPMENT-used-surplus

### Wanted

#### WANTED

MACHINERY OR PLANT INCLUDING  
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 Filter Presses Pulverizers  
 Heavy Duty Mixers Packaging and Wrapping Equipment  
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Chemical Equipment for Defense Plant Work  
 Autoclaves Kettles  
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 Filters Pulverizers  
 Tanks

Interested in complete plants—either now operating or idle. Give full particulars when writing  
 W 3117 Chemical Week  
 330 W. 42nd St., N.Y. 36, N.Y.

### For Sale

**Autoclaves**—2 new Flange Carbon Steel 100 p.s.i.g. ASME and Penna. approved and stamped. Round horizontal, approximately 36" o.d. 108" long in sheet plus ASME dished head. Flat head with 21" x 25" quick opening automatic door. FS-1043, Chemical Week.

**Ball Tube** 3" x 6' Kennedy Van Saun Continuous, air-swept mills, with drive, feeder, fan and steel balls. Perry Equip. Corp., 1415 N. 6th, Phila. 22, Pa.

**Filters**: Shrivels, Sperry, Sweetland, etc. Perry Equipment, 1415 N. 6th St., Phila. 22, Pa.

**Stainless Steel Tanks**—25 gal. to 5,000 gal. capacity—quick delivery. Quaid Fabrications, Inc., 157 W. Oxford St., Phila. 22, Pa. GArfield 6-7630.

**Tanks Aluminum, compartment**—2,700 gal. & 3000 gal. Perry Equip. Corp., 1415 N. 6th St., Phila. 22, Pa.

**Tanks, Steel, 15,000 gal.** with 970' of 3" coil and 40 HP vertical agitator. Perry Equip. Corp., 1415 N. 6th St., Phila. 22, Pa.

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#### SURPLUS NEW EQUIPMENT

May be purchased at fraction of cost

3—SHARPLES PN-14 Super-D-Centers Stainless Steel—Complete with automatic slide discharge, belts, driving sheaves and tools.

1—WESTPHALIA Centrifuge Model KG 1006, 6 Chamber Bowl, Stainless Steel—Complete with 3-phase, 60 cycle, Class 1, Group D, explosion proof motor, all accessories, fittings and clutch.

2—AMESTEAM Boilers—Type A-250—250 H. P., 8625 lbs. steam per hr. at 100 psig. fired complete with burners, all necessary controls, operates on 220 volts, 3 phase, 60 cycle.

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FS1074 Chemical Week

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 HAnover 2-6970

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### SALES OPPORTUNITIES

If you are a manufacturer seeking new or added sales outlets—or if you are a manufacturer's agent or chemicals distributor with the capacity, time and energy to take on additional lines—make your interests known in this column of CHEMICAL WEEK. The right agent or jobber teamed up with the saleswise manufacturer makes the right combination for the hard selling days ahead. There's profit for both, which can be initiated through low-cost classified advertising. Write TRACERS Dept., Chemical Week, 330 W. 42nd St., N.Y. 36, N.Y.

## RESEARCH . . . . .

a broader objective: taking the speculation out of the price structure of fatty acids, placing them in a better position to compete with petrochemicals and other groups of raw materials. It's highly doubtful that TE-42 can do the job single-handed.

But here's something you can count on: successful or not, TE-42 won't be the last Igepon. A substantial investment in new methyltaurine capacity plus more than a thousand potential Igepon structures guarantees no dearth of incentive or potential for research.

**Room for 100:** Construction has begun on a new \$800,000 Emery Industries application research center. Adjoining Emery's Cincinnati plant, the building will provide more working area for the company's basic research, development, and chemical engineering departments. Included in the proposed setup: equipment for plant-scale evaluation of Emery's plasticizers, fatty acids and textile oils. Designed to accommodate 100 researchers, the new facilities can be expanded (by the addition of wings) to house another 150. Estimated completion date: late '54.

**Ammonia Potential:** Chemists Yasuo Matsuki and Yasuo Sekiguchi of Tohoku University (Sendai, Japan) have placed ammonia in contention for a piece of the petroleum refining market. In the laboratories of the university's research institute of nonaqueous solutions, the pair plumbed the technological potential of liquid ammonia as a solvent for extraction refining.

Results of single and continuous extraction experiments with low-boiling petroleum fractions led to these conclusions:

- Acids and saponifiable compounds are easily extracted, but sulfur chemicals and unsaturated materials are difficult to remove.

- Liquid ammonia is about as efficient as liquid sulfur dioxide in the extraction of aromatics. But the former is less costly, less corrosive, rates consideration on these counts.

- Solvent selectivity of liquid ammonia climbs as temperature drops.

**Power Drive:** One of the last of the researcher's hand tools has now yielded to mechanization. Fisher Scientific Co. has just unveiled a spatula powered by a midget 115-volt, 50-60-cycle ac. motor. The midget motor vibrates the stainless steel blade, facilitates the release of particles. With the vibrating spatula, reports Fisher, particles can be dropped single, in a steady stream,

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## RESEARCH . . .

or in rapid bursts. Moreover, the instrument can be used to break up loose aggregates of crystals. Fisher contends that the new motor-driven model will make for faster, more accurate weighings. Cost: \$12.50.

Also designed to make life easier for the laboratory worker is a new series of glassware washers. Three models, specifically intended for laboratory glassware, handle a broad range of working loads. All feature high-pressure jet water systems. According to the manufacturer, Heinicke Instruments (Hollywood, Fla.), the new washers make short work of waxes, culture media, organic and inorganic chemical deposits, and tenacious soils encountered in research and control laboratories. Collectively, they'll take anything from capillary pipets to 10-liter bottles.

**Going West:** Drawn by fast-stepping West Coast industrial growth, Arthur D. Little, Inc. (Cambridge, Mass.) will set up shop in San Francisco early this year. Christian Matthew will head the consulting firm's Western arm.

**Ounce of Prevention:** Cancer-conscious medics, making a gloomy statistical case against cigarette smoking, may well spur a rash of new research aimed at stripping tobacco of possible cancer-causing chemicals. Highly significant in this context are the results of pioneering research conducted by Columbia University botanist Ray Dawson, which opens the door to the possibility of controlling the composition of tobacco by altering soil make-up. Working with carefully grown (at USDA's Bureau of Plant Industry, Beltsville, Md.) plants, Dawson set out to discover whether tobacco trace metals (copper, molybdenum, boron, manganese, zinc and iron) had any effect on nicotine synthesis. His findings: nicotine manufacture in the tobacco plant is controlled by trace amounts of manganese and boron. Restricting manganese supply caused a drop in nicotine production; restricting boron, on the other hand, boosts nicotine content.

**Ready for Action:** Southern Research Institute's (Birmingham, Ala.) big (five stories high) new cancer research building is now being equipped. Financed by the Charles F. Kettering and Robert R. Meyer Foundations, the latest spearhead of the cancer war cost \$350,000, will consolidate the institute's broad program of anticancer activities.

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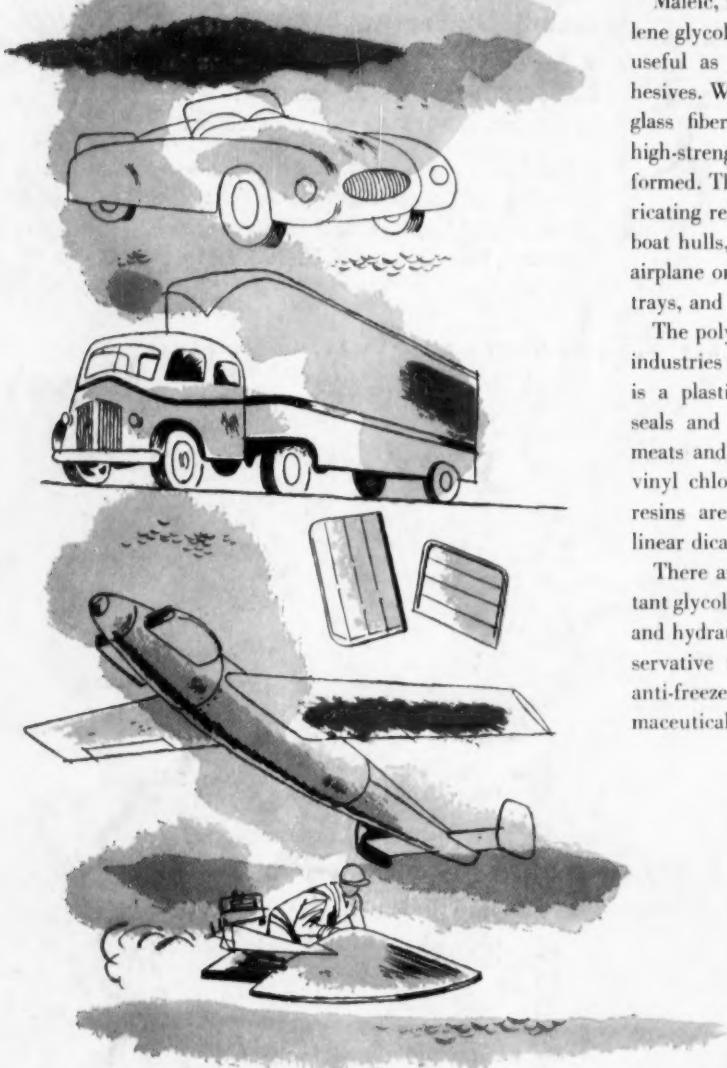
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